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RESOURCE MANUAL

SURVEY ANALYSIS PACKAGE

SAP

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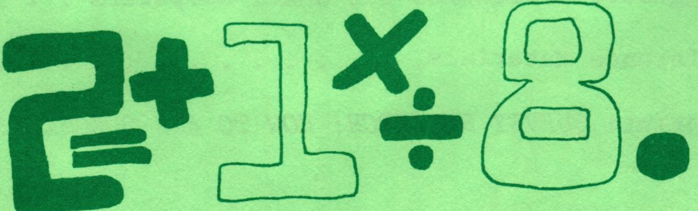

HUNTINGTON TWO COMPUTER PROJECT

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SAP

RESOURCE MANUAL

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I. BACKGROUND MATERIALS FOR *SAP* PROGRAM

The materials in this unit are not intended to be a complete manual which describes in detail all the steps and procedures involved in survey research. There are several texts and other instructional resources available which do exactly this. These are listed and described in this Manual under Section IX, REFERENCE MATERIALS. The materials in this unit are designed to supplement these references by providing some guidelines for making survey research an appropriate focus for a secondary social studies unit, and by giving complete instructional materials relating to those aspects of survey research which directly relate to the use of the computer. We suggest that you make use of a combination of the suggested resource materials and the materials in this unit.

We have included in this handbook a reprinted chapter* from Oliver Benson's book, *POLITICAL SCIENCE LABORATORY*. This chapter, entitled "Survey Research," gives a good deal of valuable background information about the procedures involved in survey research and should be very helpful in preparing for this unit. Perhaps one of the best resources for this unit is the booklet, *TESTING FOR TRUTH: A STUDY OF HYPOTHESIS EVALUATION*, and the *INSTRUCTOR'S GUIDE*, prepared by Sociological Resources for the Social Studies, and published by Allyn and Bacon, Inc. This booklet was specifically written for secondary school students and presents survey research in a clear and understandable way. Although it does not treat use of the computer in survey research, you should find that the complete materials we have prepared in this unit relative to using the computer are nicely complementary to *TESTING FOR TRUTH*.

This *RESOURCE MANUAL* also includes a group of exercise sets, each of which relates specifically to a particular topic in survey research. Since most of the resources we have suggested do not include exercises, these will probably be helpful for students to check their understanding as the unit progresses. Exercise set 4 includes a sample survey. This could be used for practice with procedures involved in using the computer, or as the basis for a unit test.

II. SUGGESTED PROJECTS

The following projects are suggested as enrichment activities for a unit on survey research.

1) Make a collection of magazine and newspaper articles and advertisements which make use of survey results. Discuss these with respect to the information about the survey which *is* and *is not* given in the article

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*Reprinted with permission from Charles E. Merrill Publishing Co., Columbus, Ohio, 1969.

or ad. Discuss how the presentation of the survey results are likely to influence the reader.

2) Make a study of some of the well known political polls, such as the Harris or Gallup polls. Find out how they choose their samples, devise questionnaires, administer their questionnaires, etc. Investigate how meaningful and accurate they have been historically.

3) Obtain the results of a good survey, and try to use the results to support several different (and possibly contradictory) conclusions by leaving out information, selecting subsamples, etc. Write mock newspaper articles which state and "support" the varying points of view. This is really an exercise in "lying with statistics" and should promote an understanding of how careful one must be in judging the results of any survey.

4) Conduct an experiment which illustrates how samples tend to reflect the size of different groups in the population. For example, suppose you wanted to study a population of 150 girls and 150 boys. Get 150 white beans to represent the girls and 150 green beans to represent the boys. Mix the beans thoroughly in a jar or pan, so that each will have an equal chance of being selected. Now take a sample of 30 beans. If the sample reflects the true situation, it will consist of 15 white and 15 green beans; however, since it is an estimate, you can expect it to vary somewhat. In order to see how close a sample of 30 will come, draw a series of 30 samples, replacing the 30 beans after each draw. Keep track of the results of each draw. If you wish, repeat the experiment with a larger sample, say 60. Compare the results.

5) Get copies of the survey studies on adolescent boys and adolescent girls conducted by Purdue University (see *STUDENT MANUAL*). Use parts of the survey with selected samples of students in your school. Is there a significant difference in the results of the 1950's and your 1972 studies? Do you think teenagers have changed much with respect to the opinions and attitudes investigated in the survey?

6) Survey research is a very important and useful technique in the business world. Business people collect data which can help them decide everything from what shape shampoo bottle would have the greatest customer appeal to what hours a store should be open. In several communities, students have been able to conduct survey studies which were of great help to community businesses. Make contacts with several business people in your community to determine their information needs. Then conduct your surveys and submit formal reports to the business people. The Distributive Education Clubs of America (DECA) publishes an official handbook as well as special bulletins which designate questions that students could research in their own communities. Possible areas for this type of research are:

a) the spending patterns and buying habits of teenagers in your community

b) the effect of trading stamps on store patronage

c) the effect of a new shopping center on the downtown business district

d) ways to encourage residents to shop in a local community

e) the influence of advertising on sales of a particular product.

7) Survey research can be a very helpful tool in studying your community. It can bring to light the causes of some problems and some possible solutions to them. Several projects relating to community study can be designed with the help of the book *STUDYING YOUR COMMUNITY* (New York: The Russell Sage Foundation, 1955). One timely problem that might be interesting to explore is that of the environmental awareness and concern of the residents of your community. Some possible areas for research on this problem are:

a) the degree of environmental awareness and concern of different age groups in the community

b) the degree of use of recycling centers, or

c) the reasons for non-use of recycling centers, or

d) the projected use of a recycling center to be installed

e) the use of neighborhood car pools for shopping, driving to work, etc.

f) the projected use for a shopping shuttle bus

g) the extent of possible use of more mass transportation facilities in your community

h) the average numbers of electrical appliances used by families in your community.

Your results may be able to provide helpful information to community leaders, and then you may be able to participate in identifying problems and devising some solutions.

8) An election year provides many opportunities for the application of survey research. Many projects relating to candidate or issue support can be designed, which could be carried out at both the school and the community level. For example, you may wish to determine if support for different candidates varies across age levels, classes, sex, or political affiliation of parents.

III. FORMULAE USED IN THE PROGRAM

Mean (M)

$$M = \frac{\Sigma x}{N}$$

where x assumes each value of the variable, N is the number of values in the set, and Σ is a summation sign which indicates that one should sum all the values of x.

Standard deviation (σ)

$$\sigma = \left(\frac{\Sigma(x-M)^2}{N}\right)^{\frac{1}{2}}$$

where x is a value of the variable, M is the mean of the set of values, and N is the number of values in the set.

Chi-square (χ)

$$\chi^2 = \Sigma \frac{(f_o - f_e)^2}{f_e}$$

where, for a given cell in a cross tabulation, f_o is the observed frequency, and f_e is the expected frequency.

Correlation coefficient (gamma) (γ)

$$\gamma = \frac{\Sigma f_a - \Sigma f_i}{\Sigma f_a + \Sigma f_i}$$

where f_a = the frequency of agreements,
and f_i = the frequency of inversions.

To compute Σf_a, we take each number in the table of observed frequencies, beginning with the number in the upper left-hand corner, and multiply it by the sum of all the numbers below and to the right of it. The sum of all these products is Σf_a.

To compute Σf_i, we reverse the process. Beginning with the number in the upper right-hand corner of the table, we multiply each number by the sum of all the numbers below and to the left of it. The sum of these products is Σf_i. A complete discussion of how to calculate and interpret the statistics included in the SAP program can be found in any standard statistics textbook.

With OPTION 2, two statistics are calculated. One of these is the *chi-square* value. Chi square is a number which helps you determine the significance of your results. That is, it helps you find out how likely it was that your results were due to chance alone and not to any real difference among your population categories. Once you know the value of chi square for your tabulated data, you can look in a standardized table of chi-square probabilities (given at the end of this manual) to find out what the probability is that your results are due to chance alone.

If the probability that they were due to chance alone is less than or equal to .05 (or 5 chances in 100), your results are said to be significant. As the probability that your results are due to chance gets higher than .05, the results are less and less significant. Further detailed directions for using the chi-square probability table are given on page 11 of this manual.

The second value that is printed out with OPTIONS 2, 3, and 4 is the *correlation-coefficient* value (here called gamma). Although the computer will print the correlation-coefficient value for every kind of table, it is only meaningful for certain types of data tables. Before we explain what the correlation-coefficient value means, we will describe some different types of data.

In doing survey research, it is often convenient to identify people in categories such as race, sex, religion, or political party. When you have this kind of data about a population, you can compute percentages or make judgments about relationships between various options within the categories. But with these kinds of categories (race, sex, religion, etc.), you cannot infer that one alternative in a category is higher or lower, or better or worse than another. For example, you cannot say that a response of "female" to a sex-identification question is a *higher* response than that of "male"; or that a response of "Protestant" to a religious-preference question is *lower* than a response of "Jewish." In other words, there are some kinds of responses that cannot be ranked or ordered. Data involving such responses is called *nominal level* data.

A second type of data involves responses that *can* be ordered or ranked; that is, responses for which we can say that one response is higher or lower, or greater or smaller than another. For example, suppose that students were asked to rate the image they have of themselves on a scale of 1 (very negative self-image) to 5 (very positive self-image). Their responses could be ranked, and we could say that a rating of 5 indicates a more positive self-image on the part of the respondent than a rating of 3. Data involving responses that can be ordered like this is called *ordinal level* data. With ordinal level data, we do not necessarily know how much higher one possible value is than another, nor are we able to say, for example, that a person who rated his self-image with a "4" has twice as good a self-image as a person who rated his self-image with a "2." We can say, however, that a response of "4" indicates a more positive self-image than a response of "2."

Now back to the correlation-coefficient value. This value is useful only when you are evaluating *ordinal level* data. The correlation-coefficient value for a table will be a number between -1 and 1 which tells you how strong an association exists between two variables. When we speak of an "association between two variables," we are referring to the situation in which high values for one variable are associated with high values for the other variable. To say that there is a strong association between self-image and achievement in school, for example, is to say that those who have a more positive self-image tend to have higher achievement levels in school, and those who have a less positive self-image tend to have lower achievement levels in school.

A correlation-coefficient value of 1 indicates a very strong association between two variables. As the correlation-coefficient value sinks to zero, it indicates a weaker and weaker association. A negative value for correlation coefficient indicates an *inverse* association. When one variable gets higher or bigger as the other gets lower or smaller, there is said to be an *inverse* association between the two variables. One example of an inverse association is the relationship between temperature and amount of clothes worn. As the temperature gets lower and it gets colder, people wear more clothes. As the temperature rises and it gets hotter, people wear fewer clothes. As the correlation-coefficient value goes from 0 to -1, it indicates a stronger and stronger *inverse* relationship between the two variables. A correlation-coefficient value of -1 indicates the strongest inverse association.

Suppose that you had conducted a survey and had measured students' achievement motivation and the social standing of their fathers. Suppose that your table of observed frequencies turned out as follows:

SOCIAL STANDING OF FATHER[1]

		High	Mod.High	Mod.Low	Low	Totals
Achievement Motivation	High	6	3	4	2	15
	Mod.High	4	5	1	2	12
	Mod.Low	2	4	6	1	13
	Low	1	3	7	5	16
	Totals	13	15	18	10	56

---

[1] Dean J. Champion, *BASIC STATISTICS FOR SOCIAL RESEARCH*, (Scranton, Pennsylvania: Chandler Publishing Co., 1970), p. 221.

The correlation-coefficient value for this table is .385. This means that there is not much of an association between achievement motivation and social standing of father. The correlation-coefficient value ranges between -1 and +1 with 0 indicating no relationship.

Can you see why the correlation-coefficient value only makes sense when you are using *ordinal level* variables? It wouldn't mean anything to say that there is a strong association between religious preference and political-party preference, because there is no way to order the alternatives in each category. We can't give meaning to the phrase "high religious preference" or "high political-party preference." Of course, we could change our categories and ask about association between the degree to which a person practices religion and the degree to which he is involved in political activities -- but that is an entirely different approach.

There is one point which might be a source of confusion to you. We have said earlier that when we are going to use the computer to analyze survey data, we will assign numbers to alternative responses to questions. For example, if we had asked a sex-identification question, we might code a response of "male" as "1," and a response of "female" as "2." The fact that we have assigned the number "2" to "female" does not in any way mean that the response "female" is somehow a higher response than "male." The numbers here are not used to order the responses; they are used to distinguish the responses. Of course we understand that, but the computer can not tell whether the 1's and the 2's are numbers which represent responses which have been ordered, or numbers which simply represent different responses that are not ordered. Since the computer doesn't know this bit of information, it calculates the correlation-coefficient value for every table of frequencies, and it is up to you to determine whether this value is meaningful in any particular case. *REMEMBER:* If the data in your table is ordinal-level data, the correlation-coefficient value is meaningful. If the data is only nominal-level, then you can ignore the correlation-coefficient value.

In very short review, then, the computer will print a value for *chi square* and a value for *correlation coefficient gamma*. The chi-square value helps you find the probability that the results of your study are due to chance alone. The correlation-coefficient value, if appropriate, tells you how strong an association there is between your two variables. Both of these values help you evaluate your survey data.

IV. TABLE OF CHI-SQUARE PROBABILITIES

Once you know the chi-square value for your data table, it is a simple matter to find the probability level for your table. The probability level is a number which tells you the probability that the results you got from your survey were due to chance alone; that is, it tells you how likely it is that your results occurred because you somehow just happened to choose a special sample. As you can figure out, a low probability level would mean that there is a low likelihood that the results were due to chance alone. Said in a different way, a low probability level means that your results are probably significant. On the other hand, a high probability level would mean that there is a high likelihood that the results were due to chance alone, or in other words, your results are probably less significant.

To find the probability level for a set of your results, you will use a standardized statistical table called "Critical Values of Chi-Square." This table can be found in almost all statistics books, and a copy of it has been included on page 9 of this manual. The table has been worked out by mathematicians, and all you have to do is learn how to use it. Turn to the table and take a look at it for a minute. The body of the table contains various chi-square values. At the top of the table, there is a row of numbers set off from the rest of the table. These are the numbers representing probability levels. At the left of the table is a column of numbers headed "degrees of freedom." These are numbers which can be associated with data tables of various sizes.

Now, to find the probability level for a table you have made as a result of your survey data, you must first determine which number in the "degrees of freedom" column is associated with your table. This is easy to do. You simply count the number of rows and the number of columns in your table. Let "r" stand for number of rows you have, and let "c" stand for the number of columns. The number of "degrees of freedom" for your table will be the number (r-1)(c-1). So, if you had a table with four rows (r=4) and three columns (c=3), the number of degrees of freedom you would associate with your table would be (4-1)(3-1), which is (3)(2), which equals 6. If your table had five rows (r=5) and five columns (c=5), the number of degrees of freedom would be (5-1)(5-1), which is (4)(4), which equals 16. In other words, to get the number of degrees of freedom for a table, you simply take the number of rows in your table, minus one, and you multiply that number by the number of columns in your table, minus one.

Once you know the number of degrees of freedom for your table, you find that number in the "degrees of freedom" column, and then look across the row which that number begins until you come to the chi-square value for your table, or the value which is closest to it. Then you look at the top of the column in which the chi-square value appears. The probability level at the top of this column is the probability level for your table.

Critical Values of Chi-Square

	Probability under H_0 that $x^2 \geq$ chi-square													
df	*.99*	*.98*	*.95*	*.90*	*.80*	*.70*	*.50*	*.30*	*.20*	*.10*	*.05*	*.02*	*.01*	*.001*
1	.00016	.00063	.0039	.016	.064	.15	.46	1.07	1.64	2.71	3.84	5.41	6.64	10.83
2	.02	.04	.10	.21	.45	.71	1.39	2.41	3.22	4.60	5.99	7.82	9.21	13.82
3	.12	18	.35	.58	1.00	1.42	2.37	3.66	4.64	6.25	7.82	9.84	11.34	16.27
4	.30	.43	.71	1.06	1.65	2.20	3.36	4.88	5.99	7.78	9.49	11.67	13.28	18.46
5	.55	.75	1.14	1.61	2.34	3.00	4.35	6.06	7.29	9.24	11.07	13.39	15.09	20.52
6	.87	1.13	1.64	2.20	3.07	3.83	5.35	7.23	8.56	10.64	12.59	15.03	16.81	22.46
7	1.24	1.56	2.17	2.83	3.82	4.67	6.35	8.38	9.80	12.02	14.07	16.62	18.48	24.32
8	1.65	2.03	2.73	3.49	4.59	5.53	7.34	9.52	11.03	13.36	15.51	18.17	20.09	26.12
9	2.09	2.53	3.32	4.17	5.38	6.39	8.34	10.66	12.24	14.68	16.92	19.68	21.67	27.88
10	2.56	3.06	3.94	4.86	6.18	7.27	9.34	11.78	13.44	15.99	18.31	21.16	23.21	29.59
11	3.05	3.61	4.58	5.58	6.99	8.15	10.34	12.90	14.63	17.28	19.68	22.62	24.72	31.26
12	3.57	4.18	5.23	6.30	7.81	9.03	11.34	14.01	15.81	18.55	21.03	24.05	26.22	32.91
13	4.11	4.76	5.89	7.04	8.63	9.93	12.34	15.12	16.98	19.81	22.36	25.47	27.69	34.53
14	4.66	5.37	6.57	7.79	9.47	10.82	13.34	16.22	18.15	21.06	23.68	26.87	29.14	36.12
15	5.23	5.98	7.26	8.55	10.31	11.72	14.34	17.32	19.31	22.31	25.00	28.26	30.58	37.70
16	5.81	6.61	7.96	9.31	11.15	12.62	15.34	18.42	20.46	23.54	26.30	29.63	32.00	39.29
17	6.41	7.26	8.67	10.08	12.00	13.53	16.34	19.51	21.62	24.77	27.59	31.00	33.41	40.75
18	7.02	7.91	9.39	10.86	12.86	14.44	17.34	20.60	22.76	25.99	28.87	32.35	34.80	42.31
19	7.63	8.57	10.12	11.65	13.72	15.35	18.34	21.69	23.90	27.20	30.14	33.69	36.19	43.82
20	8.26	9.24	10.85	12.44	14.58	16.27	19.34	22.78	25.04	28.41	31.41	35.02	37.57	45.32
21	8.90	9.92	11.59	13.24	15.44	17.18	20.34	23.86	26.17	29.62	32.67	36.34	38.93	46.80
22	9.54	10.60	12.34	14.04	16.31	18.10	21.24	24.94	27.30	30.81	33.92	37.66	40.29	48.27
23	10.20	11.29	13.09	14.85	17.19	19.02	22.34	26.02	28.43	32.01	35.17	38.97	41.64	49.73
24	10.86	11.99	13.85	15.66	18.06	19.94	23.34	27.10	29.55	33.20	36.42	40.27	42.98	51.18
25	11.52	12.70	14.61	16.47	18.94	20.87	24.34	28.17	30.68	34.38	37.65	41.57	44.31	52.62
26	12.20	13.41	15.38	17.29	19.82	21.79	25.34	29.25	31.80	35.56	38.88	42.86	45.64	54.05
27	12.88	14.12	16.15	18.11	20.70	22.72	26.34	30.32	32.91	36.74	40.11	44.14	46.96	55.48
28	13.56	14.85	16.93	18.94	21.59	23.65	27.34	31.39	34.03	37.92	41.34	45.42	48.28	56.89
29	14.26	15.57	17.71	19.77	22.48	24.58	28.34	32.46	35.14	39.09	42.56	46.69	49.59	58.30
30	14.95	16.31	18.49	20.60	23.36	25.51	29.34	33.53	36.25	40.26	43.77	47.96	50.89	59.70

SOURCE: Table IV of Fisher and Yates
STATISTICAL TABLES FOR BIOLOGICAL, AGRICULTRUAL, AND MEDICAL RESEARCH
(Edinburgh: Oliver and Boyd, Ltd.) by permission of authors and publisher.

V. SAMPLE RUNS

```
1500 DATA 111,111,112,111,111
1501 DATA 111,112,111,122,122
1502 DATA 122,122,122,121,122
1503 DATA 122,121,121,122,122
1504 DATA 212,211,211,211,211
1505 DATA 211,212,211,211,212
1506 DATA 221,221,222,221,221
1507 DATA 222,222,222,222,222
1508 DATA 311,311,311,311,311
1509 DATA 311,312,312,312,312
1510 DATA 311,311,321,321,322
1511 DATA 322,322,322,322,322
1512 DATA 411,411,411,411,412
1513 DATA 411,411,411,411,422
1514 DATA 422,422,422,422,422
1515 DATA 421,421,421,421,421
1516 DATA 422,422,422,411,211
1517 DATA 222,211,212,111,111
1518 DATA 122,112,311,312,321
1519 DATA 321
```

YOU MUST FIRST ENTER YOUR DATA IN LINES 1500 - 1900. REFER TO THE STUDENT MANUAL FOR INSTRUCTIONS. IF YOU MAKE A MISTAKE IN TYPING (AS WAS DONE IN LINE 1510), SIMPLY RETYPE THE ENTIRE LINE. THIS ERASES THE MISTAKE.

```
SAP                 15:13            31-JUL-73



                   SURVEY ANALYSIS PROGRAM
HOW MANY VARIABLES ?3

OPTION  ?1

VARIABLE ?1
```

HERE YOU SELECT THE VARIABLE YOU WISH TO EXAMINE. REFER TO YOUR DATA CODING FORM FOR VARIABLE NUMBERS.

```
NUMBER OF VALUES TO BE RECODED FOR VARIABLE  1  ?0

RANGE OF VAR.  1  ?1,4
```

EACH OPTION YOU SELECT INCLUDES A RECODING OPTION (SEE BELOW FOR AN ILLUSTRATION OF ITS USE).

```
VALUE   NO.
    1   24
    2   24
    3   24
    4   24
TOTAL   96

MEAN =   2.5
S.D. =   1.1
```

OPTION 1 CALCULATES THE TOTAL FOR EACH VARIABLE VALUE, THE GRAND TOTAL, THE MEAN, AND THE STANDARD DEVIATION (S.D.). THE RESOURCE MANUAL DEFINES ALL THESE TERMS.

```
OPTION  ?2
```

OPTION 2 WILL CONSTRUCT A TABLE OF OBSERVED FREQUENCIES (A TABLE CONTAINING THE ACTUAL DATA).

```
VARIABLES  ?1,2
NUMBER OF VALUES TO BE RECODED FOR VARIABLE  1  ?0

NUMBER OF VALUES TO BE RECODED FOR VARIABLE  2  ?0

RANGE OF VAR.  1  ?1,4
RANGE OF VAR.  2  ?1,2
```

YOU MUST SPECIFY THE RANGE FOR EACH VARIABLE. (THE NUMBER OF RELEVANT OR MEANINGFUL VALUES THAT CONTAIN DATA.)

```
OBSERVED FREQUENCIES
(ROW: VAR.  1 , COLUMN: VAR.  2 )


         1      2    TOTALS


 1     11     13      24

 2     13     11      24

 3     14     10      24

 4     10     14      24

TOTALS

       48     48      96
```

THIS IS A TABLE OF OBSERVED FREQUENCIES. IF THESE DATA WERE THE RESULTS OF A SURVEY, THEY WOULD MEAN THAT 11 PERSONS WHO ANSWERED WITH A (1) ON VARIABLE 1 ALSO ANSWERED WITH A (1) ON VARIABLE 2; 13 PEOPLE WHO ANSWERED WITH A (1) ON VARIABLE 1 ANSWERED WITH A (2) ON VARIABLE 2. AND SO ON.

```
CHI SQUARE=  1.7  DF=  3
CALCULATE GAMMA(1=YES, 0=NO) ?1
GAMMA =  0.03
```

OPTION 2 ALSO CALCULATES CHI SQUARE AND GAMMA. REFER TO RESOURCE MANUAL FOR DEFINITIONS AND EXPLANATIONS.

```
OPTION  ?1

VARIABLE ?2
NUMBER OF VALUES TO BE RECODED FOR VARIABLE  2  ?0

RANGE OF VAR.  2  ?1,2

VALUE  NO.
    1  48
    2  48
TOTAL  96

MEAN =  1.5
S.D. =  0.5


OPTION  ?1

VARIABLE ?3
NUMBER OF VALUES TO BE RECODED FOR VARIABLE  3  ?0

RANGE OF VAR.  3  ?1,2

VALUE  NO.
    1  51
    2  45
TOTAL  96

MEAN =  1.5
S.D. =  0.5


OPTION  ?2

VARIABLES  ?1,3
NUMBER OF VALUES TO BE RECODED FOR VARIABLE  1  ?0

NUMBER OF VALUES TO BE RECODED FOR VARIABLE  3  ?0

RANGE OF VAR.  1  ?1,4
RANGE OF VAR.  3  ?1,

? INPUT DATA NOT IN CORRECT FORM--RETYPE LINE
 ?1,2
```

IF YOU MAKE AN ERROR WHEN INPUTTING YOUR RESPONSE, THE COMPUTER WILL INFORM YOU OF IT AND ASK YOU TO RETYPE THE LINE.

```
OBSERVED FREQUENCIES
(ROW: VAR.  1 , COLUMN: VAR.  3 )


       1      2   TOTALS


 1   11     13      24

 2   13     11      24

 3   13     11      24

 4   14     10      24

TOTALS

     51     45      96

CHI SQUARE=  0.8   DF=  3
CALCULATE GAMMA(1=YES, 0=NO) ?1
GAMMA = -0.13
```

OPTION 3 COMPUTES ROW PERCENTAGES FOR A TABLE CONTAINING ANY TWO VARIABLES.

```
OPTION  ?3



VARIABLES  ?2,3
NUMBER OF VALUES TO BE RECODED FOR VARIABLE  2  ?0

NUMBER OF VALUES TO BE RECODED FOR VARIABLE  3  ?0

RANGE OF VAR.  2  ?1,2
RANGE OF VAR.  3  ?1,2



OBSERVED FREQUENCIES BY ROW PERCENTAGES
(ROW: VAR.  2 , COLUMN: VAR.  3 )


       1      2   TOTALS


 1   72.9  27.1  100

 2   33.3  66.7  100
```

```
OPTION  ?4
```

<u>OPTION 4</u> COMPUTES COLUMN PERCENTAGES FOR <u>A TABLE</u> CONTAINING ANY TWO VARIABLES.

```
VARIABLES  ?2,3
NUMBER OF VALUES TO BE RECODED FOR VARIABLE  2  ?0

NUMBER OF VALUES TO BE RECODED FOR VARIABLE  3  ?0

RANGE OF VAR.  2  ?1,2
RANGE OF VAR.  3  ?1,2


OBSERVED FREQUENCIES BY COLUMN PERCENTAGES
(ROW: VAR.  2 , COLUMN: VAR.  3 )


      1     2


 1   68.6  28.9

 2   31.4  71.1

TOTALS

    100   100
```

<u>OPTION 5</u> CALCULATES AND PRINTS A TABLE OF <u>EXPECTED</u> FREQUENCIES. (SEE THE <u>RESOURCE MANUAL</u> FOR AN EXPLANATION AS WELL AS AN ILLUSTRATION OF ITS INTERPRETATION.)

```
OPTION  ?5

VARIABLES  ?2,3
NUMBER OF VALUES TO BE RECODED FOR VARIABLE  2  ?0

NUMBER OF VALUES TO BE RECODED FOR VARIABLE  3  ?0

RANGE OF VAR.  2  ?1,2
RANGE OF VAR.  3  ?1,2


EXPECTED FREQUENCIES
(ROW: VAR.  2 , COLUMN: VAR.  3 )


      1     2   TOTALS


 1   25.5  22.5   48

 2   25.5  22.5   48

TOTALS

     51    45    96
```

```
OPTION  ?1

VARIABLE ?1
NUMBER OF VALUES TO BE RECODED FOR VARIABLE  1  ?2
```

ILLUSTRATED HERE IS THE USE OF THE RECODE OPTION. VARIABLE 1 ORIGINALLY HAS 4 VALU

HERE THESE VALUES ARE REGROUPED INTO 2 VALUES. VALUES 1 AND 2 ARE PUT INTO A NEW GROUP WITH A VALUE OF 1. VALUES 3 AND 4 ARE PUT INTO A NEW GROUP WITH A NEW VALUE OF 2. (NOTICE THE NEW RANGE OF VARIABLE 1 IS 1,2.) WHEN YOU HAVE RECODED ALL THE VALUES YOU WISH, TYPE A "0" AFTER THE "?" TO INDICATE THAT YOU ARE FINISHED RECODING.

```
RECODED NEW VALUE ?1
        OLD VALUE ?1
        OLD VALUE ?2
NUMBER OF VALUES TO BE RECODED FOR VARIABLE  1  ?2
RECODED NEW VALUE ?2
        OLD VALUE ?3
        OLD VALUE ?4
NUMBER OF VALUES TO BE RECODED FOR VARIABLE  1  ?0

RANGE OF VAR.  1  ?1,2

VALUE  NO.
    1  48
    2  48
TOTAL  96

MEAN =  1.5
S.D. =  0.5


OPTION  ?1

VARIABLE ?1
NUMBER OF VALUES TO BE RECODED FOR VARIABLE  1  ?3
RECODED NEW VALUE ?1
        OLD VALUE ?1
        OLD VALUE ?2
        OLD VALUE ?3
NUMBER OF VALUES TO BE RECODED FOR VARIABLE  1  ?1
RECODED NEW VALUE ?2
        OLD VALUE ?4
NUMBER OF VALUES TO BE RECODED FOR VARIABLE  1  ?0

RANGE OF VAR.  1  ?1,2

VALUE  NO.
    1  72
    2  24
TOTAL  96

MEAN =  1.3
S.D. =  0.4


OPTION  ?6
```

OPTION 6 TERMINATES THE PROGRAM. USE WHEN YOU ARE FINISHED WITH YOUR ANALYSIS.

VI. PROGRAM LISTING

```
100 REM SAP - SURVEY ANALYSIS PROGRAM
105 REM COPYRIGHT 1972,1973 - STATE UNIVERSITY OF NEW YORK
110 REM DEVELOPED BY D. KLASSEN
115 REM PROGRAMMED BY S. HOLLANDER
120 REM LATEST REVISION: 7-30-73
125 DEF FNA(Y)=INT(10*Y+.5)/10
130 DEF FNB(Y)=INT(R/10↑(C0-Y)-INT(R/10↑(C0-Y+1))*10)
135 DEF FNE(Y)=SGN(SGN(9-Y)+SGN(Y-W))-ABS(SGN(Y-INT(Y)))
140 DIMP(10,10)
150 PRINT
155 PRINT" ","SURVEY ANALYSIS PROGRAM"
160 PRINT
161 REM V2: FORMAT TYPEOUT-LINES UP DECPOINT-C.S. V2=0
162 LETV2=1
165 REM V:COLUMN WIDTH-C.S.USE <=5 IF CR/LF OCCURS PREMATURELY
170 LETV=6
175 REM W: LOWER LIMIT FOR SUBSCRIPTS-CERTAIN SYSTEMS USE 1 HERE
180 LETW=0
181 PRINT"HOW MANY VARIABLES";
182 INPUTC0
185 RESTORE
190 PRINT
200 PRINT"OPTION ";
205 INPUTL
210 PRINT
215 IFL=0THEN200
216 IFL=6THEN2000
220 IFINT(L)<>LTHEN200
225 IFABS(L)>5THEN200
230 IFL=-1THEN315
235 IFL<>1THEN440
240 PRINT"VARIABLE";
245 INPUTC
250 LETA=0
255 GOSUB1440
280 READR
285 IFR<0THEN315
290 LETZ=FNB(C)
295 IFZ>0THEN305
300 IFW=1THEN280
305 LETP(1,Z)=P(1,Z)+1
310 GOTO280
315 LETM=C
320 GOSUB1270
```

```
325 PRINT"RANGE OF VAR. ";C;
330 INPUTC2,C1
331 IFFNE(C2)+FNE(C1)<2THEN325
335 PRINT
340 LETT=0
345 LETN=0
350 PRINT"VALUE  NO."
355 FORZ=C2TOC1
360 LETN=N+P(1,Z)
365 LETT=T+(Z+1)*P(1,Z)
370 PRINT"   ";Z;P(1,Z)
375 NEXTZ
380 PRINT"TOTAL ";N
385 PRINT
390 IFN=0THEN655
395 LETM=T/N-1
400 PRINT"MEAN = ";FNA(M)
405 LETR=0
410 FORZ=C2TOC1
415 LETR=R+(Z-M)↑2*P(1,Z)
420 NEXTZ
425 PRINT"S.D. = ";FNA(SQR(R/N))
430 PRINT
435 GOTO185
440 IFL<0THEN525
445 PRINT"VARIABLES ";
450 INPUTA,C
455 GOSUB1440
480 READR
485 IFR<0THEN525
490 LETZ=FNB(A)
495 LETR=FNB(C)
500 IFZ<WTHEN480
505 IFR<WTHEN480
515 LETP(Z,R)=P(Z,R)+1
520 GOTO480
525 LETM=A
530 GOSUB1270
535 LETM=C
540 GOSUB1270
545 FORZ=WTO10
550 LETP(Z,10)=0
555 LETP(10,Z)=0
560 NEXTZ
565 PRINT"RANGE OF VAR. ";A;
570 INPUTA2,A1
571 IFFNE(A2)+FNE(A1)<2THEN565
572 LETM1=0
575 PRINT"RANGE OF VAR. ";C;
```

```
580 INPUTC2,C1
581 IFFNE(C2)+FNE(C1)<2THEN575
585 PRINT
586 LETM2=0
590 PRINT
595 PRINT
600 LETL=ABS(L)
605 LETT=0
610 FORZ=A2TOA1
615 FORZ1=C2TOC1
620 LETM=P(Z,Z1)
625 LETP(Z,10)=P(Z,10)+M
630 LETP(10,Z1)=P(10,Z1)+M
635 LETT=T+M
640 NEXTZ1
645 NEXTZ
650 IFT>0THEN665
655 PRINT"ALL ZEROS"
660 GOTO185
665 IFL=5THEN705
670 PRINT"OBSERVED FREQUENCIES ";
675 IFL=3THEN695
680 IFL<4THEN710
685 PRINT"BY COLUMN PERCENTAGES";
690 GOTO710
695 PRINT"BY ROW PERCENTAGES";
700 GOTO710
705 PRINT"EXPECTED FREQUENCIES";
710 PRINT
715 PRINT"(ROW: VAR. ";A;", COLUMN: VAR. ";C;")"
720 PRINT
725 PRINT
730 LETR=12+(C1-C2)*V
735 FORZ=C2TOC1
740 PRINTTAB(5+(Z-C2)*V);Z;
745 NEXTZ
750 IFL=4THEN760
755 PRINTTAB(R-2);"TOTALS";
760 PRINT
765 PRINT
770 PRINT
775 FORZ=A2TOA1
780 PRINTZ;
782 LETM1=M1+P(Z,10)*(Z+1)
785 FORZ1=C2TOC1
790 IFL=2THEN815
795 IFL=3THEN830
800 IFL=4THEN850
805 LETX=FNA(P(Z,10)*P(10,Z1)/T)
810 GOTO820
```

```
815 LETX=P(Z,Z1)
820 LETM=P(Z,10)
825 GOTO875
830 IFP(Z,10)=0THEN865
835 LETX=FNA(100*P(Z,Z1)/P(Z,10))
840 LETM=100
845 GOTO875
850 IFP(10,Z1)=0THEN865
855 LETX=FNA(100*P(Z,Z1)/P(10,Z1))
860 GOTO875
865 LETX=0
870 LETM=0
875 GOSUB1215
880 NEXTZ1
885 IFL=4THEN905
890 LETN=R
895 LETX=M
900 GOSUB1220
905 PRINT
910 PRINT
915 NEXTZ
920 IFL=3THEN995
925 PRINT"TOTALS"
930 PRINT
935 FORZ1=C2TOC1
936 LETM2=M2+P(10,Z1)*(Z1+1)
940 IFL=4THEN955
945 LETX=P(10,Z1)
950 GOTO960
955 LETX=100
960 GOSUB1215
965 NEXTZ1
970 IFL=4THEN990
975 LETX=T
980 LETN=R
985 GOSUB1220
990 PRINT
995 PRINT
1000 IFL<>2THEN185
1005 LETH=0
1010 FORZ=A2TOA1
1015 FORX=C2TOC1
1020 LETE=P(Z,10)*P(10,X)/T
1025 IFE=0THEN1035
1030 LETH=H+(P(Z,X)-E)↑2/E
1035 NEXTX
1040 NEXTZ
1045 PRINT"CHI SQUARE= ";FNA(H);" DF= ";FNA((A1-A2)*(C1-C2))
1050 PRINT"CALCULATE GAMMA(1=YES, 0=NO)";
```

```
1055 INPUTZ
1060 IFZ<>1THEN185
1065 LETS=0
1070 FORZ=A2TOA1-1
1075 FORZ1=C2TOC1-1
1080 LETS1=0
1085 FORX=Z+1TOA1
1090 FORX1=Z1+1TOC1
1095 LETS1=S1+P(X,X1)
1100 NEXTX1
1105 NEXTX
1110 LETS=S+P(Z,Z1)*S1
1115 NEXTZ1
1120 NEXTZ
1125 LETN=0
1130 FORZ=A2TOA1-1
1135 FORZ1=C2+1TOC1
1140 LETR=0
1145 FORX=Z+1TOA1
1150 FORX1=C2TOZ1-1
1155 LETR=R+P(X,X1)
1160 NEXTX1
1165 NEXTX
1170 LETN=N+P(Z,Z1)*R
1175 NEXTZ1
1180 NEXTZ
1185 IFS+N=0THEN1200
1190 PRINT"GAMMA = ";INT(100*(S-N)/(S+N)+.5)*.01
1195 GOTO1205
1200 PRINT"GAMMA = 0"
1205 PRINT
1210 GOTO185
1215 LETN=5+(Z1-C2)*V
1220 IFX=0THEN1260
1225 IFX>=1THEN1240
1230 LETN=N+V2
1235 GOTO1260
1240 IFX<10THEN1260
1245 LETN=N-1
1250 IFX<100THEN1260
1255 LETN=N-1
1260 PRINTTAB(N);X;
1265 RETURN
1270 PRINT"NUMBER OF VALUES TO BE RECODED FOR VARIABLE ";M;
1275 INPUTN
1280 IFN=0THEN1415
1285 IFFNE(N)<1THEN1270
1290 PRINT"RECODED NEW VALUE";
1295 INPUTR
1300 IFFNE(R)<1THEN1290
```

```
1305 FORZ=WTO10
1310 LETP(Z,10)=0
1315 NEXTZ
1320 FORZ1=1TON
1325 PRINTTAB(8);"OLD VALUE";
1330 INPUTX
1331 IFFNE(X)<1THEN1325
1335 FORZ=WTO9
1340 IFM=ATHEN1360
1345 LETP(Z,10)=P(Z,10)+P(Z,X)
1350 LETP(Z,X)=0
1355 GOTO1370
1360 LETP(Z,10)=P(Z,10)+P(X,Z)
1365 LETP(X,Z)=0
1370 NEXTZ
1375 NEXTZ1
1380 FORZ=WTO9
1385 IFM=ATHEN1400
1390 LETP(Z,R)=P(Z,10)
1395 GOTO1405
1400 LETP(R,Z)=P(Z,10)
1405 NEXTZ
1410 GOTO1270
1415 PRINT
1420 RETURN
1430 PRINT"BAD RESPONDENT DATA, RESPONDENT ";N
1435 STOP
1440 FORZ=WTO10
1441 FORZ1=WTO10
1450 LETP(Z,Z1)=0
1455 NEXTZ1
1460 NEXTZ
1465 RETURN
1500 DATA 111,111,112,111,111
1501 DATA 111,112,111,122,122
1502 DATA 122,122,122,121,122
1503 DATA 122,121,121,122,122
1504 DATA 212,211,211,211,211
1505 DATA 211,212,211,211,212
1506 DATA 221,221,222,221,221
1507 DATA 222,222,222,222,222
1508 DATA 311,311,311,311,311
1509 DATA 311,312,312,312,312
1510 DATA 311,311,321,321,322
1511 DATA 322,322,322,322,322
1512 DATA 411,411,411,411,412
1513 DATA 411,411,411,411,422
1514 DATA 422,422,422,422,422
1515 DATA 421,421,421,421,421
1516 DATA 422,422,422,411,211
1517 DATA 222,211,212,111,111
1518 DATA 122,112,311,312,321
1519 DATA 321
1995 DATA -1
2000 END

READY
```

VII. EXERCISE SETS WITH ANSWER KEYS

A. Exercise Set 1: Developing Questions for a Survey

1. State whether you think each of the following questions is a good or a poor question for a survey of people your age. If you think it is a poor question, explain why. (The questions are independent -- do not think of them as making up a whole survey.)

a) Do you think teenagers have too much freedom?

b) If the men listed below were running for President, and you were a registered voter, for whom would you vote?

(1) George McGovern ( )
(2) Richard Nixon ( )
(3) George Wallace ( )
(4) wouldn't vote ( )

c) Would you say that you are not opposed to increased federal aid to the cities?

(1) yes ( )
(2) no ( )

____

____

____

____

d) How firmly do you believe in God?

(1) very ( )
(2) fairly ( )
(3) some doubts ( )
(4) don't believe ( )

____

____

____

____

e) Do you think that Andrew Jackson played a significant role in the rise of liberal capitalism?

(1) yes ( )
(2) no ( )
(3) uncertain ( )

____

____

____

____

f) When high school students are out for an evening, should their parents know exactly where they are?

(1) always ( )
(2) never ( )

g) Do parents understand?

(1) yes ( )
(2) no ( )
(3) sometimes ( )

h) Some people say that the years following the stock market crash of 1929 were the hardest of their lives. Do you agree or disagree?

i) Should the government prohibit some people from making speeches?

(1) yes ( )
(2) no ( )

j) All the teachers and the administrators in this school are in favor of stricter dress rules. Do you agree with them?

(1) yes ( )
(2) no ( )

2. Suppose that you had arrived at the hypothesis that 12th graders spend significantly more time watching television than 9th graders do. State whether each of the following would be a good or a poor question to ask in a survey designed to research your hypothesis. If you think a question is poor, explain why.

a) Do you ever watch television?

( ) yes
( ) no

____
____
____
____

b) Did you see the Flip Wilson show last week?

( ) yes
( ) no

____
____
____
____

c) Do you usually watch television alone or with someone else?

( ) usually alone
( ) usually with someone
( ) varies
( ) don't watch television

____
____
____
____

d) During an average week (Sunday through Saturday), how much time do you spend watching television?

( ) 1 to 3 hours
( ) 4 to 6 hours
( ) 7 to 9 hours
( ) 10 to 12 hours
( ) 12 to 14 hours
( ) 14 to 16 hours
( ) more than 16 hours

e) Do you enjoy watching television?

( ) yes
( ) no

f) Do you watch "The Bold Ones" regularly?

( ) yes
( ) no

g) How much time do you spend watching television?

( ) 1 to 5 hours

( ) more than 5 hours

3. Write two questions that you would use in a survey to research the hypothesis that more senior girls than senior boys would prefer to date one person exclusively than to date several different people at the same time.

ANSWER KEY - Exercise Set 1: Developing Questions for a Survey

1. a) Poor question. It is far too general in scope, and terms are used that are not clear. What is meant by "freedom"? How much is "too much"?

   b) Good question.

   c) Poor question. The use of double negative ("not opposed") is confusing.

   d) Good question.

   e) Poor question. "Liberal capitalism" may not be understood by many people. The term should be explained, or the question should be reworded.

   f) Poor question. The selection of responses is too limited, and may force the respondent to express a position that does not represent his true feelings.

   g) Poor question. It is far too general, and leaves the respondent to interpret what is meant by the question.

   h) Poor question. It asks about something that is outside the experience of the respondent.

   i) Poor question. It presents unfair alternatives, and may force the respondent to take a position that does not represent his true feelings.

   j) Poor question. It uses prestige words which may influence the respondent to answer in a different way than he normally would.

2. a) Poor question. It is not complete enough to shed any light on the hypothesis.

   b) Poor question. It gives no information relevant to the amount of time spent watching television.

   c) Poor question. It gives no information about the amount of time spent watching television.

   d) Good question.

e) Poor question. It is not relevant to the hypothesis.

f) Poor question. It is not relevant to the hypothesis.

g) Poor question. It does not specify any time period, and does not give enough alternative responses to get data that could confirm or deny the hypothesis.

3. There could be several different answers. One possibility:

a) Are you a girl or a boy?

(1) girl ( )

(2) boy ( )

b) Which of the following dating situations would you prefer?

(1) to date one person exclusively ( )

(2) to date several different people at the same time ( )

(3) no opinion ( )

B. Exercise Set 2: Sampling

1. What is meant by a "random" sample?

2. Would each of the following sampling procedures yield a true "random" sample? If not, describe the biases that are introduced by the sampling method.

   a) Population: teenagers between 15 and 17 years of age in your community

      Method: select every tenth student from the alphabetical high school enrollment lists from the community high schools

   b) Population: people 18 years old or older in your community

      Method: select every tenth name from the voter registration lists

c) Population: families in your community

Method: select every tenth name from the telephone book

d) Population: shoppers at a particular grocery store

Method: select every tenth customer to enter the store on a particular day

3. Describe a method for getting a random sample of each of the following populations. Mention any problems you might encounter in getting a true "random" sample.

a) Dog-owners in your community

b) Subscribers to a particular magazine

____

____

____

____

c) People who drive on a particular highway route

____

____

____

____

4. "A recent survey showed that 61% of American teenagers believe that they should discuss with their parents what happens on their dates." What are some questions you would ask about this survey before you would accept the results?

____

____

____

____

____

____

____

ANSWER KEY - Exercise Set 2: Sampling

1. Answers will be expressed differently. The major point to look for is that for a sample to be random, each individual and each combination of individuals must have an equal chance of being selected.

2. a) No. This method of sampling excludes those teenagers in the community who have left school, or who attend schools not in the community.

   b) No. This method excludes all those over 18 who are not registered voters.

   c) No. This method excludes those families who do not have telephones.

   d) Yes.

3. a) Probably the best one could do is obtain a list of owners of registered dogs, and select from that. However, this excludes those who have dogs which are not registered, but it would be nearly impossible to track down those people. This type of difficulty can occur frequently with random sampling.

   b) Use a listing of subscribers and select every tenth name.

   c) On a specific day, a road check could be set up, and every tenth car in either direction could be stopped. Choice of a day would depend on whether the researcher wanted to survey weekday or weekend traffic. If both, two days should be chosen: one during the week, and one on the weekend. One problem encountered here is that it is conceivable that one person could be interviewed more than once.

4. How large was the sample?
   Was the sample random?
   What were the respondents asked?
   Can the results be applied to the entire teenage population?
   Who was in the sample?

C. Exercise Set 3: Analyzing Survey Data

1. Suppose that you wanted to determine whether there was a difference between the opinions of senior girls and of senior boys in your school relative to whether they approved of lowering the voting age to 18. Suppose that you administered the following questionnaire to 100 senior girls and 100 senior boys and got the results given below.

Student Opinion Questionnaire

1. Are you a girl or boy?

( ) girl
( ) boy

2. Do you approve of lowering the voting age to 18?

( ) yes
( ) no

Results:

	Yes	No	Row Total
Boys	48 ( )	52 ( )	100
Girls	34 ( )	66 ( )	100
Column Total			
	82	118	200

a) Find the expected frequencies for the table and enter them in the parentheses in the table.

b) Compute the chi-square value for the table and find the level of significance.

chi square = __________ level of significance >p> __________

c) Briefly summarize the results of the survey.

2. A survey of 10 teenage girls asked how much money they usually spend on a birthday gift for their father. Their responses were:

$10, $7, $5, $15, $8, $9, $5, $10, $9, $7.

a) What is the mean amount spent by the girls?

b) What is the standard deviation?

ANSWER KEY - Exercise Set 3: Analyzing Survey Data

1. a)

	Yes	No	Row Total
Boys	48(41)	52(59)	100
Girls	34(41)	66(59)	100
Column Total	82	118	$\boxed{200}$

b) $X^2 = 4.1$ $.05 > p > .02$

c) Answers will vary but should include the points:

(1) significantly more boys favored the lower voting age, whereas significantly more girls opposed it.

(2) in general, more students opposed the lower voting age than favored it.

(3) the results are statistically significant.

2. mean = \$8.50

standard deviation = \$2.77

D. Exercise Set 4: Using the Computer in Survey Research

1. The following questionnaire was administered to 50 high school juniors. Their responses are coded on the data coding forms on the following pages.

1. Are you a boy or girl?

   1) boy ☐
   2) girl ☐

2. Do you want to go on to a college or some other educational institution directly after you finish high school?

   1) yes ☐
   2) no ☐
   3) undecided ☐

3. Do you believe that your parents expect you to go on to a college or other educational institution directly after you finish high school?

   1) yes ☐
   2) no ☐
   3) don't know ☐

DATA CODING FORM

QUESTIONS/VARIABLES

	Sex	Want to go on to school	Parents expect you to go on					
Respondent's Number	1	2	3	4	5	6	7	8
1	1	1	1					
2	1	2	2					
3	2	1	1					
4	1	1	1					
5	1	2	2					
6	1	1	1					
7	2	2	2					
8	2	3	1					
9	1	2	3					
10	2	1	1					
11	2	1	2					
12	1	1	1					
13	2	2	1					
14	2	3	2					
15	1	3	3					
16	1	2	1					
17	2	2	2					
18	2	1	2					
19	2	2	1					

NAME: A. Sample

DATE: now

CLASS: Social Studies III

SUBJECT: Juniors' attitudes toward going on to school.

RANGE FOR VARIABLES

Var.	Low	High
1	1	2
2	1	3
3	1	3
4		
5		
6		
7		
8		

DATA CODING FORM

QUESTIONS/VARIABLES

	Sex	Want to go on to school	Parents expect you to go on					
Respondent's Number	1	2	3	4	5	6	7	8
20	1	3	1					
21	1	1	3					
22	1	1	1					
23	1	2	2					
24	2	2	2					
25	2	1	1					
26	2	3	1					
27	2	1	3					
28	2	3	3					
29	2	2	1					
30	1	1	1					
31	2	3	3					
32	1	3	1					
33	2	3	1					
34	2	1	1					
35	2	3	2					
36	1	2	1					
37	1	1	1					
38	1	3	1					

NAME: a. Sample

DATE: now

CLASS: Social Studies III

SUBJECT: Juniors' attitudes toward going on to school.

RANGE FOR VARIABLES		
Var.	Low	High
1	1	2
2	1	3
3	1	3
4		
5		
6		
7		
8		

DATA CODING FORM

	QUESTIONS/VARIABLES							
	Sex	Want to go on to school	Parents expect you to go on					
Respondent's Number	1	2	3	4	5	6	7	8
39	2	3	3					
40	1	2	2					
41	2	3	2					
42	1	3	1					
43	2	3	1					
44	1	3	2					
45	2	3	3					
46	1	1	1					
47	1	3	3					
48	2	1	1					
49	1	2	1					
50	1	1	1					

NAME: a. Sample

DATE: now

CLASS: Social Studies III

SUBJECT: Juniors' attitudes toward going on to school.

RANGE FOR VARIABLES		
Var.	Low	High
1	1	2
2	1	3
3	1	3
4		
5		
6		
7		
8		

a) Enter the survey data onto the computer.

b) For each question below, decide what kind of table is needed from the computer to answer the question. When you know everything that you want from the computer, run the program to get the necessary information. Then, use the printouts to help you answer the questions.

1) Is there any statistically significant relationship between each pair of variables listed below? If there is, briefly describe the relationship.

Sex and desire to go on to school? ____________

____

____

____

Sex and parent expectations? ____________

____

____

____

Desire to go on to school and parent expectations?

____

____

____

i. What percentage of boys felt that their parents expected them to go on to school?

____

ii. What percentage of girls didn't know how their parents felt about their going on to school?

____

iii. What percentage of those who wanted to go on to school were boys?

____

iv. What percentage of those who did not want go to go on to school were girls?

____

E. Exercise Set 5: Drawing Conclusions

1. What is wrong with the conclusions drawn in each of the following?

   a) A survey of high school students showed that 40% of seniors read the foreign news section of their newspapers, whereas only 31% of the sophomores do. Therefore, the seniors know more about foreign affairs than the sophomores.

   b) A survey showed that fewer people over 60 years old voted in the last presidential election than did people under 60 years of age. Therefore, as people get older, they lose their desire to participate in government.

   c) A survey of 18 year olds showed that those who had worn braces on their teeth during their high school years had fewer cavities than those who did not wear braces. Therefore, wearing braces prevents tooth decay.

ANSWER KEY - Exercise Set 5: Drawing Conclusions

1. a) Although the conclusion may be true, it is not justified on the basis of the survey results. For example, sophomores may read more news magazines or watch more TV newscasts, and could be as well or better acquainted with foreign news than seniors.

   b) Since there are fewer people over 60 than under 60 anyway, there must be fewer who vote. Therefore, the survey results as quoted give no support to the conclusion. Also, the conclusion has equated not voting with a lack of desire to participate in government, when in fact, there may be several reasons for which a person may not vote.

   c) The conclusion establishes a cause/effect relationship, when most likely there is simply a correlation. Most people who wear braces do not chew gum or eat lots of candy, and they do have regular and frequent dental care. Their lack of cavities is more probably due to one or more of these other practices which generally accompany wearing braces.

VIII. SUGGESTED PROCEDURES FOR SMALL COMPUTERS

In case the storage area of your computer is too small to accept the entire *SAP* program, use the following procedures. These procedures will allow you to have access to all of the OPTIONS contained in the *SAP* program.

STEPS:

1) Clear the work area (most computers take either "NEW" or "SCRATCH").

2) Read the second section of the program tape. (The first and second sections of the tape are separated by leader/trailer punches.) The second section contains all of *SAP* except GAMMA.

3) Use *SAP* as directed.

4) Should you wish to use GAMMA, proceed as follows:

   a) Delete either OPTION 1 or the RECODE subroutine. (See below for Deletion Commands.)

   b) Read the first section of the program tape. (This section contains GAMMA.)

   c) When you finish using GAMMA, return to STEP 1.

DELETION COMMANDS

To delete OPTION 1	DELETE 230-435
To delete OPTIONS 2, 3, 4, 5	DELETE 235, 440-1210
To delete GAMMA	DELETE 1050-1205
To delete RECODE	DELETE 1275-1410

LINES 161 to 180

These lines contain three variables that may have to be changed, depending upon the individual characteristics of certain systems. The values assigned to these variables currently reflect the correct settings for an EDUSYSTEM-50 version of BASIC.

LINES 161, 162 - Variable V2

V2 is used to align the decimal point in table printouts. It affects numbers larger than zero (0) and less than one. On systems where a digit 0 is not typed before the decimal point (e.g., .21), V2 should be set to 1. This is the default case. Certain systems type a "0" before the decimal point (e.g., 0.21). On these systems V2 should be set to 0.

LINES 165, 170 - Variable V

V controls the width of each column in table printouts; by default it is set to 6. On certain systems, the length of a line of typeout is limited to a certain number of characters. When this limit is reached, the typeout is resumed on the next line. When the tables to be printed are wide, it may be necessary to adjust this variable.

LINES 175, 180 - Variable W

W is set to 0 by default. On those systems that allow the 0 array element to be used (e.g., A(0)), W should remain at 0. Certain systems do not allow the 0 element to be used. These systems should set W to 1. It should be noted that these systems will not allow a response of 0 to any of the questions in the survey.

IX. REFERENCE MATERIALS

1. Backstrom, Charles H. and Gerald D. Hursh
SURVEY RESEARCH
Evanston, Illinois: Northwestern University Press, 1963 (paperback available).

This book includes a discussion of how to conduct a survey research project within a community.

2. Champion, Dean J.
BASIC STATISTICS FOR SOCIAL RESEARCH
Scranton, Pennsylvania: Chandler Publishing Company, 1970.

This book is an easy-to-understand collection of statistical methods written specifically for students of social science who are not expert mathematicians. The book provides an especially lucid explanation of the chi-square and correlation-coefficient values. A secondary student with a knowledge of basic algebra should be able to use this text with minimal difficulty.

3. *GALLUP POLITICAL INDEX REPORTS*
Available from: Roper Public Opinion Research Center,
Williams College, Williamstown, Massachusetts (02167)

These compilations of Gallup poll results present current findings and background data in handy reference form. The reports cover all aspects of the political scene, domestic issues, and international problems. These reports would be helpful resources for questions and illustrations of survey research.

4. Hennessey, Bernard C.
PUBLIC OPINION
Belmont, California: Wadsworth Publishing Company, 1965.

This book treats opinion formation, opinion measurement, opinion change, and the relationships between opinions and public policy. Chapter three, "Survey Research," is particularly appropriate for this unit. Although the text is probably too difficult for direct use by an average secondary student, it could be of some help to the teacher in preparing the unit on survey research.

5. Hyman, Herbert
SURVEY DESIGN AND ANALYSIS
New York, New York: Free Press, 1955.

A complete discussion of how to carry out a survey research project.

6. Johnson, Donovan A. and William Glenn
THE WORLD OF STATISTICS
St. Louis, Missouri: Webster Publishing Co., 1961 (paperback available).

This book is written specifically for high school students, and gives an elementary introduction to basic statistical concepts. It is very clearly written, and could be used independently by a student. It treats graphs, mean, mode, median, frequency distribution, percentile rank, sampling, probability of chance, standard deviation, the normal curve and normal distribution, and drawing conclusions from data.

7. Merton, Robert K., Marjorie Fiske, and Patricia L. Kendall
THE FOCUSED INTERVIEW
New York, New York: Free Press, 1956.

This book discusses the interviewing process. Special attention is devoted to getting the information you want from people.

8. Miller, Delbert C.
HANDBOOK OF RESEARCH DESIGN AND SOCIAL MEASUREMENT
New York, New York: David McKay Co., Inc., 1964 (paperback available).

This handbook contains example questions.

9. Robinson, John P. and Phillip Shaver
MEASURES OF SOCIAL PSYCHOLOGICAL ATTITUDES
Ann Arbor, Michigan: Institute for Social Research, 1969.

This volume contains hundreds of questions used in actual surveys conducted by various researchers. Topic areas include: Life Satisfaction and Happiness; Self-Esteem; Alienation and Anomia; Authoritarianism; Dogmatism; General Attitudes Toward People, Values, and Religious Attitudes. This volume is very helpful in designing a questionnaire. A companion volume entitled, *MEASURES OF POLITICAL ATTITUDES*, contains sample questions in the political area including such topics as: Party Identification; Foreign Policy; Domestic Policy; and so on.

10. Schwartz, Alvin
WHAT DO YOU THINK?
New York, New York: E.P.Dutton & Co., Inc., 1966.

This is an introduction to public opinion written for secondary school students. It is clearly written, interesting, and contains many illustrations and examples. The book treats opinion formation, the effects of opinion on products, jobs, government, and politics. It also deals with the pollsters, and with techniques for conducting survey research. In addition, there is a good section on evaluating the reports of newspapers, magazines, and television broadcasts.

11. Sociological Resources for the Social Studies
TESTING FOR TRUTH: A STUDY OF HYPOTHESIS EVALUATION
Boston, Massachusetts: Allyn and Bacon, Inc., 1969.

This booklet is designed specifically for the high school student. It discusses in detail the survey research process from start to finish. This is an excellent resource, especially when used with the *INSTRUCTOR'S GUIDE*.

12. Survey Research Center, University of Michigan
ADOLESCENT GIRLS

This is the report of a nationwide study of girls between the ages of 11 and 18, which was conducted in the late 1950's. It details all the questions used in the survey, reports results, and analyzes them. It would be a good source book for questions and ideas for projects. There is a parallel study, *ADOLESCENT BOYS*, which would prove equally useful.

13. Warren, Roland L.
STUDYING YOUR COMMUNITY
New York, New York: Russell Sage Foundation, 1955.

This book is a working manual for people who are interested in studying their own community. It is designed for the layman, and contains several chapters which help the reader learn about particular aspects of his community. Each chapter consists of some descriptive text and question outlines. The book also contains material that helps the reader relate his particular concerns to the community as a whole. This is a good resource for projects related to community study.

SURVEY RESEARCH:

How to Ask Questions

6

In the modern study of political behavior, a great contribution has been made by political survey research. Most of the major surveys have been large-scale enterprises, requiring the cooperation of teams of investigators and analysts, besides considerable funding. Our introductory look at the field of survey work, though cursory, should prepare you to engage in a team project with somewhat more knowledge of what is involved than if you were a complete novice, and furnish some guidelines for conducting a small survey of your own as a learning exercise.

6-1 The Sample

In preparing to conduct a survey, an important part of the technical advance planning is the drawing of the sample. Practical considerations will always limit the adequacy of the sample, even in the most ambitious and costly project, but a few precautions will help avoid serious error.

Simple Random Sample. As the brief look at statistical tests in the last topic emphasizes, it is not so much the sheer size of the sample which is important, but whether it is actually representative of the population it is supposed to represent. The famous *Literary Digest* poll of 1936 was based on a sample of millions but was so biased that it lives in history for its egregious miscalling of the greatest presidential landslide on record. On the other hand, scientifically selected samples of from 1500 to 3000 are now commonly used to obtain fairly reliable data on the entire population of the United States. The basic principle of scientific sampling is that the sample be truly random: that all persons in the population it is supposed to represent have an equal statistical chance of being included in it.

A purely random sample of the whole population is often less economical than one chosen on some selective principle related to the purpose of the survey. The smaller the subpopulation you want to study, the more waste there will be in a sample of the whole. In a project on attitudes of new students, you would not draw a random sample of all students (though a smaller group of upperclassmen might well be included in a separate sample for comparison). Similarly a survey of all adults of voting age in a community is uneconomic if the survey is concerned only with the attitudes of labor union members. Sometimes the subpopulation cannot be identified in advance, so that the sample must be drawn from a larger group; in a survey to test views of voters in a city election, for example, it is usually not possible to identify those most likely to vote, though it is almost certain that there will be fewer voters than would turn out in elections for governor or president.

Stratified Sample. An important criterion of sample size is *homogeneity* of the population with respect to the attribute you are testing. If there is only one party on the ballot, or if the population is 100 per cent conformist, a sample of 1 is adequate. If there are six candidates in a primary race, or if opinion is split among several policy alternatives, each supported—or thought to be—by a distinct socioeconomic substratum, the sample must be large enough to tap each significant group. Homogeneity affects sampling error in terms both of number of subgroups and evenness of division among the subgroups. A landslide election is fairly easy to predict (that is, a small sample is adequate), but for one so nearly even as the Kennedy-Nixon contest of 1960, no sample could provide a safe prediction—though the polls could tell us that it would be close.

By careful identification of significant subgroups, each then sampled on a random selection basis, the sampling error may be reduced. This is the theory behind the stratified sample, which permits a better estimate for the whole population than does a purely random sample of the same size. Just how much better will depend again on homogeneity of the subgroups. If each subgroup were perfectly homogenous—if all Northerners, all women, all Catholics, all urbanites, or all blue-collar workers thought exactly alike—life would be easier for the pollsters.

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*Chapter 6 of POLITICAL SCIENCE LABORATORY by Oliver Benson
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In the stratified sample, a certain proportion of the total sample is required to be from each stratum. The national Gallup sample, used in 1964 to survey the pre-convention support of Goldwater, on which exercises 5-1 (Table 5-E), 5-3(3), 5-3(5) and 5-3(6) were based, uses a stratification on size-of-community (seven groups ranging from central cities of 1,000,000 and over to rural areas) and geographic regions. A minimum of 1500 individuals are interviewed, distributed among 150 randomly chosen sampling points. Only within the sampling point (blocks in cities) does the sample depart from the random probability principle, and even there, the interviewer is not left free to pick his respondents—he must follow a precisely set procedure planned to minimize error. Interviewers are notoriously likely to omit people who are hard to find—those who are not at home because both husband and wife are at work, those who live in walk-up apartments or in garage apartments at the rear of a lot, and those who harbor barking dogs. The Gallup organization, for example, stipulates the simple but useful rule that its interviewers conduct only one interview at each household, and for an equal number of men and women.

If you wish your sample to reflect the composition of the voting-age population of the United States on one or more stratifications, Table 6-1 will be helpful. It was developed from the large sample used by the Bureau of the Census as the basis for our table on voter turnout in Chapter 2, supplemented by approximations on religion and party preference from the Gallup data. Another possible use for Table 6-1 is to compare your own sample with the Census estimate for a given variable. The pattern used in Exercise

TABLE 6-1. *Stratification of United States Voting-Age Population by Eleven Variables* (*in percentages*)

By Region		*By Religion*		
Northeast	26.3	Protestant		67
North Central	28.1	Catholic		25
South	29.3	Jewish		4
West	16.3	Other		4
By Sex		*By Turnout*		
Men	47	Voted (1964)		70
Women	53	Did Not Vote		30
By Race		*By Politics*		
White	90	Democrat		50
Nonwhite	10	Republican		27
(Negro)	(9.4)	Independent		23
By Age		*By Education*		
21–24	9	8 years or less		29
25–44	41	9–11 years		18
45–64	34	12 years		33
65 and over	16	Over 12 years		20
By Ecology		*By Employment*		
Metropolitan	65	Employed		58
Non-metropolitan	35	Agricultural	4	
		Non-agricultural	54	
		Unemployed		2
By Income		Not in Labor Force		40
Under $3000	18	Alternative Employment Groups, by Race[a]		
$3000–$4999	20		White	Nonwhite
$5000–$7499	28	White collar	47.5	19.5
$7500–$9999	16	Blue collar	36.2	40.7
$10,000 and over	18	Service	10.7	31.7
		Farm	5.6	8.1

[a] For entire labor force over 14, excluding unemployed.

Source: Retrieved from *Statistical Abstract of the United States* (Washington: Bureau of the Census, 1967), Tables 322 and 530. Percentages rounded and cases not reported omitted. Estimates for religion and political preference approximated from data of the Gallup Organization.

5-3(1) for the chi-square test, for example, could be used to show whether your sample is reasonably representative of the age stratification of the United States voting-age population. It is also possible to weight the identified subgroups in your sample in accordance with the known national percentages, and then to use the weighted results to project your own sample into one presumably more representative of the whole nation ("stratification after selection"). If your survey is planned to test attitudes for a regional or local group, similar stratifications can be derived from more detailed data in the Census Bureau's *Statistical Abstract of the United States* or *County and City Data Book.*

Two points about a national stratified sample require further attention. (1) It does not include a state-by-state breakdown, and since state electoral votes are counted as entities in the electoral college results, the sample would need to be reorganized to take this into account in an election which appeared fairly close—not necessarily by a fifty-state breakdown, but by a somewhat more detailed regional division. (2) Special treatment will often be needed for groups representing high homogeneity or low total percentages. In the use of its similar sample to test preconvention Goldwater support, the Gallup organization found so high a negative correlation between race and preference for Goldwater that Crespi retabulated the results with Negroes excluded, feeling that this strong association might mask possible correlations among whites, for example, between region and preference.* This result demonstrates the general difficulty with a completely random sample if an investigator is interested in some particular group which is not large enough to show up in significant numbers. If interested in wealthy Negroes, the investigator would need to develop a special sample for the purpose: he would have to go out and find them. The same is true for many other groups which might be politically significant though numerically few: county central committee members, Southern district attorneys, or such influential professional categories as lawyers, doctors, and ministers.

Since the design of a large sample for a comprehensive survey is a highly technical procedure, requiring well organized group activity with adequate financing, we shall not attempt to deal with it here. The interested student is referred to the excellent manual by Backstrom and Hursh, *Survey Research,* which is both a complete introduction to the subject and a guide to further technical literature.

6-2 The Questionnaire

Writing a good questionnaire requires experience. Many mistakes will creep into the first draft even if it is prepared by experts. For this reason, it is always necessary to *pre-test* a questionnaire to discover as many such errors as possible: unintentionally misleading questions, unintentionally "loaded" phrases, words familiar to the investigator but likely to be beyond the everyday vocabulary of many respondents, and questions which appear clear enough but turn out to convey an incomplete or ambiguous meaning.

In writing a questionnaire you should have clearly in mind the purpose of the survey. Prepare by reading relevant reports of similar surveys, noting as many facets of the subject as you can think of. The actual questions may be of several types. With your survey topic in mind, as well as the broader field in which it falls, you should practice drafting questions under some of the categories noted below.

Questions to Identify the Respondent. Reviewing the discussion in Chapters 1 and 2 about the several kinds of variables and how they are used to locate the respondent in property-space, you will usually be interested in a variety of respondent-identification items.

Simple Factual Identification. These questions will elicit basic "census" data, such as age, sex, race, income, occupation, residence, voter status, and the like, and usually represent no difficulty except on touchy or prestige-involved categories. Some respondents will resent a question on income, for example; identification of race is usually best done by the investigator himself. Obviously you should avoid such terms as "blue-collar," "white-collar," "manual laborer," and "unskilled laborer," which are either meaningless to the respondent or may seem to reflect on his status.

Identification of Respondent's Information. These questions are framed to find out what the respondent knows about the subject of the survey. If he has never heard of the subject, it is useless to ask what he thinks of it. On the other hand, a few "filter" questions may remind him of things which otherwise he would not recall.

---

* This aspect of his article is explained in a letter to the author from Irving Crespi, Vice-President of the Gallup Organization, April 26, 1967.

Identification of the Respondent's Role. These questions are meant to place the respondent in his social and political context. Is he a leader or politically inactive? Does he commonly talk politics with his friends? What sources of political influence is he subject to, and what influences does he exert himself? Club memberships, church-going habits, even ordinary social visits, help place the respondent in the politically interacting public. The alert investigator often can discover useful leads on respondent's role by direct observation.

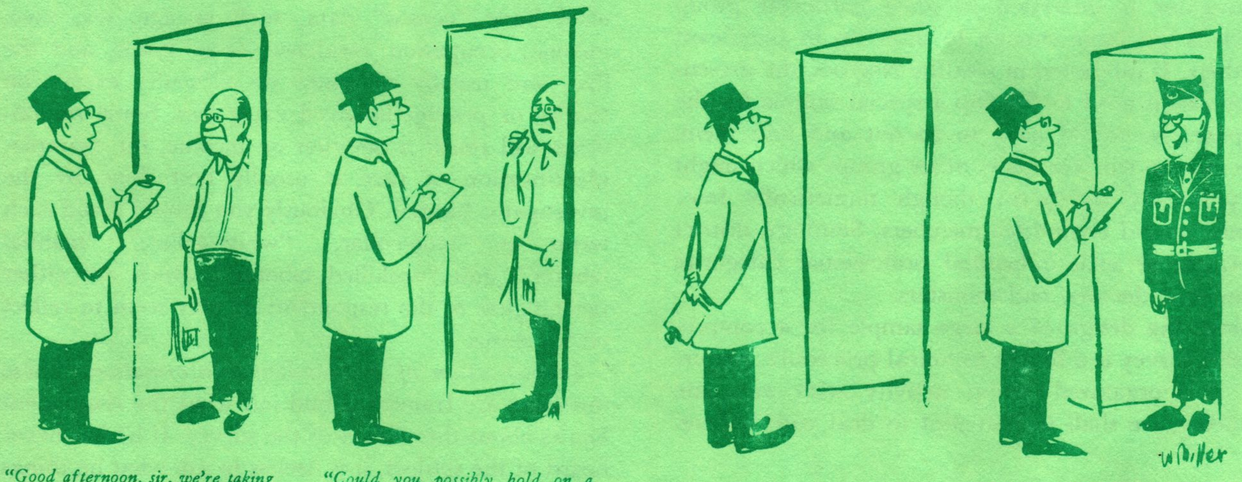
Decision Questions. These are the crucial items concerned with the substantive content of the survey, on which the respondent is asked to make some sort of choice. Though there is no clear-cut dividing line, two broad categories of decision questions will usually be included—those seeking specific choices and those meant to discover underlying motivations.

Specific choices. Respondent is asked, for example, whether he intends to vote for Candidate A or Candidate B in a forthcoming election, whether he is for or against the upcoming bond issue, whether he thinks something is good or bad, or whether his attitude is one of strong support, support, neutrality, opposition, or strong opposition.

Motivation. The investigator is usually interested not only in the respondent's specific choices, but also in the reasons for them. Why is he for Candidate A? Why does he "strongly support" or "strongly oppose" the administration policy in Viet Nam? Why is he for or against open housing, school integration, federal aid to education, medicare, legislative reapportionment, or prayers in school? Questions to discover underlying factors which influence decisions are the most difficult to prepare. Thorough probing of motivation requires skilled depth interviewing. Information on motivation which can be obtained by standardized questions is especially valuable, however, since it often helps to identify broadly based and lasting opinion categories significant beyond the range of the sample in terms of persons surveyed, specific topics covered, and the time of the survey.

Clues for motivational questions may emerge in a carefully planned pre-test. Two techniques are commonly used: an open-ended question and a standardized list of alternative "reasons." In an open-ended question, the respondent is asked to state in his own words (for example) why he thinks Candidate A is a better choice than Candidate B, or what aspect of medicare is especially appealing or objectionable. The open-ended question lends to the standardized questionnaire an element of depth interviewing, but has the disadvantages of being quite time consuming and difficult to code. The standardized list of alternatives, on the other hand, is no more complicated than any multiple-choice question. The respondent is simply asked to mark one of several "reasons." For example, if he has indicated a preference for Jones over Smith in a gubernatorial race, the next item might be:

The Alert Investigator Often Can Discover Useful Leads on Respondent's Role by Direct Observation



"Good afternoon, sir, we're taking a public-opinion poll on Viet-nam. There are a few questions . . ."

"Could you possibly hold on a minute, please? I'll be right back."

"O.K., pencil-pusher, fire away!"

Drawing by W. Miller; © 1966 The New Yorker Magazine, Inc.

If asked to pick one reason for supporting this candidate, which would you select?

I have always voted the party ticket.
He has experience in public office.
He is an honest man.
All the newspapers I read are for him.
None of the above.

A good compromise between the open-ended question and the standardized list is to include some open-ended questions at the time of the pre-test. You can then try to word the most frequent answers in standard versions for the actual survey.

6-3 Structure of Questions

While structured questions are in form either dichotomous (yes-no, true-false, good-bad, for-against) or multiple choice, several techniques have been developed for scaling responses into more meaningful categories than would be possible by either type.

1. One method is to attach a numerical weight (not disclosed to respondent) to each response in a multiple choice listing:

Do you think the President's trip to the Far East is important to our foreign policy? Would you call it:

		Weight
1________	Very important	(8)
2________	Important	(7)
3________	Unimportant	(3)
4________	Very unimportant	(2)

2. Another method, adapted from a form used by Osgood, is called the "semantic differential." It consists of placing a pair of responses at opposite ends of a line, the respondent being asked to mark the point on the line which most nearly represents his answer. The line may be broken into parts (usually seven) to force a specific weighting, or it may be continuous, and the response later weighted by use of an overlaid transparency. In neither case does the weighting scale appear on the printed questionnaire.

Do you think NATO is important to our foreign policy? Mark the place on the line which most closely represents your opinion.

Important__ __ __ __ __ __ __Unimportant
Important______________________Unimportant

3. A combination of the semantic differential and scaled response techniques, especially useful in detecting motivation factors, is illustrated below:

The President's trip to the Far East will probably have the effect of:

	Agree				Disagree
	1	2	3	4	5
Helping allied cooperation					
Increasing danger of war					
Helping promote peace					
Helping Democrats in the election					
Improving allied morale					

4. Another form of dichotomous question used to examine basic attitudes asks for a simple "agree-disagree" response to several related statements, each presumed to be characteristic of some basic attitude like conservatism, isolationism, liberalism, or aggressiveness. An example, designed to test the isolationism-cooperation continuum, might be:

The UN is in general a good thing	Agree______	Disagree______
We should strengthen NATO	Agree______	Disagree______
Foreign trade is good for the country	Agree______	Disagree______
The Peace Corps is a constructive program	Agree______	Disagree______
We need to keep our foreign aid program going, perhaps with better supervision	Agree______	Disagree______

In this pattern, respondent is given a score based on the number of agreements to the entire set of questions: "5" would represent "most internationalist," "0" would represent "most isolationist."

5. More difficult to validate is a variation of the above example, in which each successive statement is "stronger" or "weaker" than the one before it, so that the respondent would be expected to give the same answer to all questions above (or below) it in the list:

Do you agree or disagree with the following statements about the UN?

	Agree	Disagree
The UN is in general a good thing and should be strengthened into a world government.	______	______
The UN should have a permanent military force strong enough to enforce peace.	______	______

The United States should cooperate with the UN in our own foreign policy programs. ______ ______

The United States should remain in the UN even though it is often ineffective. ______ ______

The UN should not be abolished even though it is rather useless. ______ ______

If the statements actually constitute a scale ranging from strongest to weakest, the number of agreements immediately locates the respondent in a ranking of all respondents. Theoretically, a respondent replying "Agree" to the first question on the above list should also reply "Agree" to all the others. A respondent replying "Agree" to the last question, on the other hand, might well reply "Disagree" to all four of the others. The result will be that respondents will be categorized into six groups: those making scores of 5, 4, 3, 2, 1, and 0. Scaled sets are discussed more fully in Chapter 7, to which you should refer if you plan to use this device in your own work.

6. *Item Ranking Methods.* Especially useful in a primary election survey is the technique of asking the respondent to rank a list of items (in this case candidates) in order of his preference, rather than simply to select the one he favors. The method is adaptable as well to the ranking of groups or officials according to the respondent's opinion of their importance, influence, or other attribute. When the number of items to be ranked is large, they should be subdivided into several manageable short lists.

Paired rankings are often used in "trial heats" to determine how various combinations of party candidates would probably compare in an actual election:

If the two parties were to nominate the following persons for president, for which would you probably vote?

Vote for				Vote for
______	Johnson	or	Goldwater	______
______	Kennedy	or	Romney	______
______	Johnson	or	Hatfield	______

The use of paired rankings becomes impractical for a long list, because of the large number of possible permutations. It requires six pairs to rank four items as shown in the boxed display at the foot of the page.

6-4 To Structure or Not To Structure?

Even if the survey instrument is to be a completely written questionnaire to be filled in by the respondent, it is useful to think of each question as though you plan to use it in an oral interview. To what extent is the question *structured?* How much does it restrict or guide the respondent's thinking or the form of his response? The investigator must achieve a nice balance between the one extreme of over-structured questions, which may inhibit the respondent or bias his answers, and the other extreme of overly open-ended questions, which may have the virtue of not influencing the answers but also the disadvantage of not conveying enough information to elicit any answer at all. Aside from coding difficulties, the under-structured question may actually misdirect the respondent, so that his answer is off the subject. In an oral interview, these complications are detected by a skilled investigator as the interview proceeds. In a written questionnaire, however, they must be anticipated.

A helpful model for structuring questions is the familiar Stimulus-Response paradigm, which forces the investigator to keep constantly in mind the respondent's possible range of reactions to the question. Think of each question as having two functions: (1) providing an appropriate *stimulus* to the respondent, and (2) evoking a *response* useful to the purpose of the survey. Either of these two functions may be *structured* or *free.* We thus have a four-fold typology of questions:

Stimulus	Response	
	Free	Structured
Free	SF-RF	SF-RS
Structured	SS-RF	SS-RS

Which of the following organizations would you say is most influential in state politics, comparing them two at a time?

Most influential			*Most influential*	
______	Labor unions	or	Chamber of Commerce	______
______	League of Women Voters	or	County commissioners	______
______	Labor unions	or	League of Women Voters	______
______	Chamber of Commerce	or	County commissioners	______
______	County commissioners	or	Labor unions	______
______	League of Women Voters	or	Chamber of Commerce	______

Examples of each type:

Stimulus Free, Response Free:	Thinking now about American foreign policy, do you have any particular opinions you would like to mention?
Stimulus Structured, Response Free:	What is your reaction to the bombing of targets in North Viet Nam?
Stimulus Free, Response Structured:	There has been quite a bit of news recently about the possibility of peace talks on Viet Nam. Do you feel anything that has happened makes a settlement: (1) Likely? (2) Unlikely?
Stimulus Structured, Response Structured:	About the bombing of targets in North Viet Nam—do you think we should: (1) Stop it? (2) Keep it up? (3) Expand it?

6-5 Bad Questions

Many of the mistakes the inexperienced question-writer can make are outlined by Backstrom and Hursh. Their categories are listed below, with some of the illustrations drawn from recent events.

Errors of Ambiguity. The question may be:

1. *Incomplete.* "Did you vote in the last election?"
   (Respondent often does not recall any election since the last one in which he did vote.)
2. *Imprecise.* "Do you think the government's policies are responsible for the market being so low?"
   (What government? What policies? What market? How low?)
3. *Indefinite in time.* "The Demonstration Cities Bill provides for future spending of about $100 billion. Are you for or against this program?"
   (How many years in the future? Spending for what and when?)
4. *Indefinite in comparisons.* "Do you think Oklahoma spends too much for welfare?"
   (More than other states? More than for other functions? What kind of welfare?)
5. *Too simple.* "Do you see many public officials?"
   (See in person? See on TV? National, state, or local officials? How many is many?)
6. *Too complicated.* "The Demonstration Cities Bill is intended to dramatize some potential solutions to urban problems. Do you favor or oppose it?"
   ("Dramatize" by action, or by stage, screen and TV? What solutions? What does "potential" mean?)
7. *Too general.* "Do you think most people take politics seriously?"
   (Does "most" mean a majority or almost all? Does "people" mean all humans, all Americans, all adults, all citizens of the state, all residents of the city? Does "politics" mean national, state, local, or private? How serious is serious?)

Errors of Misunderstanding. The question may be:

1. *Outside the experience of respondent.* "Some people say President Johnson is egocentric. Do you agree or disagree?" So obvious an error would be rare, but respondent may be equally unaware of other terms which the investigator takes for granted.
2. *Too technical.* "Do you favor judicial review of legislation?"
   Many errors of misperception may be avoided by a brief explanation included as part of the question: "Under our system of government, the courts can rule that a law passed by Congress or a state legislature or even a city or town, is unconstitutional and cannot be enforced. Do you think the courts should have this power?"
3. *A violation of idiom.* "In the national highway program, the federal government must often take interstate right-of-ways. Do you think it should be able to do this?"
   Many respondents will hear "take States' rights away."

Errors of Intentional or Unintentional Loading. The question may:

1. *Present unfair alternatives.* "The Demonstration Cities Bill will result in the national debt going up more than $100 billion and probably won't accomplish much at that. Won't you sign this petition against it?"
2. *Malign the opposition.* "Those opposing the Demonstration Cities Bill are worried that Secretary Weaver, a Negro, will have charge of the program. Don't you think this is a prejudiced point of view?"
3. *Damn with faint praise.* "Some think the Demonstration Cities plan will do practically nothing to solve the big cities' problems. Others think it may do a little good. Do you think we ought to adopt it?"
4. *Omit alternatives.* "The experts who have studied big city problems have worked out a

program to solve some of them. Do you think we ought to make a start on such a program?"

5. *Use emotionally charged language.* "The communists have always said that our American system of free government and free enterprise will be driven into bankruptcy and destroyed by all the big spending we are doing. The Demonstration Cities Bill will drive us another $100 billion into debt. Aren't you against this?"
6. *Use prestige names and words.* "The President, Vice-President, all the Cabinet members, the mayors of New York, Chicago, and almost all other big cities, and most members of both Houses of Congress, are in favor of this program to improve our cities. Do you agree with them?"

Miscellaneous Errors. The question may be:

1. *Too short—deficient in needed information.* "Do you think the Geneva Agreements of 1954 are a reasonable basis for settling the Viet Nam war?"
2. *Too long—overabundant in unneeded information.* "A bill now before Congress would provide federal money for a number of existing grant-in-aid programs, most of which are related to cities, including slum clearance projects, metropolitan improvement projects, city and regional planning, urban renewal programs, and the like. It also contains provisions for low interest rate financing of housing for low-income families, expansion of Federal Housing Administration mortgage insurance to completely new towns, authority for FHA mortgage insurance to include building of group medical installations, grants to local governments for preservation of historic structures, and assistance to farm families in the purchase of new homes by rural housing loans. It appropriates $24 millions the first year for planning, $250 millions for urban renewal projects over a two-year period beginning July 1, 1967, and $900 millions for the other projects over the same two-year period. Do you favor or oppose this bill?"
3. *Argumentative—also usually too long.* "Since our big cities have over half of the population and contribute about 75% of the taxes, and have been having such serious problems—like the riots in Los Angeles, and all these demonstrations—it has been proposed that a federal program be started which would involve a study project this next year, and after that a start on slum clearance, more funds for housing loans, and a number of other projects. Over a ten-year period the total cost of all these projects would be only about one and a half percent of the national income. Are you for or against this bill?"
4. *Impossible to answer because in two parts.* "Do you favor the Demonstration Cities Bill or should we expand the Federal Housing Act? (1) Agree (2) Disagree"
5. *Over-folksy.* "Don't you think it's about time to get with the mess in the big cities and put this bill over?"
6. *Confused by double negatives.* "Would you say you are not opposed to this bill?"
7. *Too stilted.* "Many eminent authorities feel that the contemporary urban culture presents many problems of social disorganization and individual alienation of the utmost urgency, compelling appropriate remedial action on the part of the governmental sector of our society. Would you feel that such remedial activity is (1) proper, or (2) improper?"

6-6 Planning Your Own Survey: An Adventure in Discovery

When you undertake a survey of your own, you will realize almost at once that you are engaged in a "do-it-yourself" project.* You must select your own survey topic, prepare the survey instrument yourself, and refine it by pre-testing. Only general guidelines can be supplied.

Select Your Subject. Your topic should be selected from a field in political science of special interest to you and in which you have already acquired some knowledge of the substantive background and recent research. Your work is more likely to be well planned and to make a relevant empirical contribution than if done in a field new to you. As you develop plans for your survey, try to add to your background in both the theoretical work relevant to your subject and in the continuing process of empirical testing of accepted political lore.

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* In the experimental use of this workbook with the author's classes, each student prepared, administered, and reported on a survey as his major term project. The assignment was found to give valuable experience with a number of quantitative methods, but additional specific preparation included readings in Herbert Hyman, *Survey Design and Analysis* (New York: Free Press, 1955), Charles H. Backstrom and Gerald D. Hursh, *Survey Research* (Evanston: Northwestern University Press, 1963), and Delbert C. Miller, *Handbook of Research Design and Social Measurement* (New York: David McKay Co., Inc., 1964).

Start by searching the literature, both for suggestions and—once you have landed on a topic—for detailed information on what others have done. Immerse yourself in the subject; learn thoroughly the "state of the art." Then work out specific wording of a few hypotheses gathered from your reading and try them on your teachers and fellow-students. A few suggestions in several fields follow, but these are far from complete, intended only to trigger your own search. The works mentioned, as well as other sources of ideas for survey topics, are cited in a special section of the reading list at the end of the chapter.

Political Socialization. If you are interested in the processes whereby an individual becomes a "political man," and the influences which determine what kind of political man he becomes, examine such classic works as the "authoritarian personality" studies, Almond and Coleman's *Politics of the Developing Areas,* Hyman's *Political Socialization,* and Greenstein's *Children and Politics.* A few hypotheses you might glean from these are:

That childhood experiences exercise a strong influence on an individual's future political behavior.

That family authority patterns are reflected in the authority patterns of the political system.

That individuals whose parents were inconsistent in political party preference will be less intense in their own party preference than individuals whose parents were consistent.

Political Opinion and Reference Groups. Political group theory, important in political science since Bentley and sharpened greatly by David Truman, has profited from the sociological study of reference groups—groups with which an individual identifies strongly enough that he draws his own values from them.

Possible hypotheses to explore:

That membership in groups with conflicting values is associated with weaker support of related political issues, whereas membership in groups which share values tends to reinforce support of related political issues.

That the impact of a reference group on a member's political behavior is related to the member's view of how important the group is to his non-political interests.

That political persuasiveness of a communication to an individual from a reference group varies with salience of the group to the individual, in part determined by content and channel of the communication.

Political Ideology. Empirical study of political values is in its infancy but is a field of great promise. Impact of ideology on different classes of society, influences on the development of belief systems, and public acceptance of specific concepts of classical political theory are aspects from which an unlimited number of useful survey topics could be devised. Some possible hypotheses suitable for testing are:

That a moral or ethical principle will find greater support if expressed as an ideal than if expressed as a rule of action.

That support for a traditional principle of a given group's belief system is strongly correlated with education of respondents.

That recognition of the logical association or consistency of two or more principles packaged in a traditional belief system ("If you believe thus, you will believe so") is spotty among the mass public.

That consensus on basic democratic principles is greater among political "influentials" than among members of the general electorate.

Political Culture Norms. Cross-national cultural studies are related to ideology but are more broadly concerned with the total societal complex. They are also difficult to organize, expensive to conduct, and so are relatively rare. Their findings are also likely to be controversial. For the student of comparative politics or international relations, however, they offer a fascinating field of survey research. UNESCO has sponsored a number of such studies, including *National Stereotypes and International Understanding,* one of a series on international tensions. Buchanan and Cantril's *How Nations See Each Other* summarizes some of the UNESCO data for nine countries. Most relevant to political science is the 1965 study by Cantril, *The Pattern of Human Concerns,* reporting on interviews conducted with some 20,000 respondents in fourteen countries—including several developing nations and communist countries never surveyed before. Another outstanding project is the five-nation survey reported by Almond and Verba in *The Civic Culture,* particularly in its emphasis on the concept of "civic competence," from which additional survey topics can readily be developed. You may not be able to conduct your survey in foreign countries (see Exercise Set 10 for two small individual projects which did use international samples), but you can adapt some of the themes used in the larger surveys to your own community.

International Politics. Most surveys in international relations will be concerned with opinions on foreign policy, on the United Nations, or on specific international crises. Useful ideas for projects will emerge from Rosenau's provocative study *Public Opinion and Foreign Policy* and from his two Free Press readers, *International Politics and Foreign Policy* and *Domestic Sources of Foreign Policy.* The 1967 volume of the International Yearbook of Political Behavior Research, *Quantitative International Politics: Insights and Evidence,* edited by David Singer, should also supply a number of valuable leads.

Possible hypotheses in foreign policy:

That a person's interests in foreign policy express the interests of his more important group associations.

That limited formal education makes for simple solutions in foreign policy.

That support of international institutions such as the UN is greater in the abstract than in specific action situations.

That the range of alternatives finding substantial public support is sharply reduced in high tension situations as compared with low tension situations.

If your interest is in *judicial behavior* you might explore the hypothesis that support is greater for some leading judicial doctrine if identified with the authority of the U.S. Supreme Court than if the ruling is merely described as a principle. In the field of *legislative behavior* the work of Wahlke and Eulau is especially useful as idea sources. One of their surveys is the source of Tables 6-E and 6-F in the Exercise Set: you might turn the approach around and try to see if public views of the proper role of a legislator vary in the same way as those of the legislators themselves.

Incomplete as it is, this selection indicates the variety and scope of sources for your survey topic. Other ideas will occur to you from the survey briefs which accompany the exercises for this chapter, other tables in the workbook, and the reading list discussion below. In particular you should examine the professional political science journals, not neglecting the *Public Opinion Quarterly.*

Identify Your Variables. Having made a tentative decision on the general theme of your survey, think ahead to the tables you would like to present in your final written report. As you set up your tentative hypotheses, rough out a series of blank table formats and fill in the captions. Start with a few simple two-dimensional formats, each planned to examine the association between one behavior or attitude variable and one explanatory or causal variable. The process will force you to sharpen and clarify your plans in preparation for writing the specific questions needed to locate each respondent precisely in the "property space" defined by the variables.

Explanatory variables. For most projects, the independent (and control) variables will be respondent identification categories. Recall the three types of identification questions mentioned in Section 2—simple factual identification, identification of respondent's information, and identification of respondent's role. An interesting cross-tabulation in *The Civic Culture* survey examined the association between respondents' willingness to express opinions and the level of respondents' political information. McClosky's "leaders and followers" study, briefed in the exercises of this chapter, is an excellent example of use of role variables. Use your originality in developing information and role categories so that you can examine association patterns besides those of the elementary "census data" variety.

Attitude variables. The political opinions or attitudes you seek to explain—your dependent variables—will include specific choice items and motivation items, the latter requiring more thought and care in formulation. The beginner should avoid unusually complex motivational categories, but it is good experience to include at least one such variable planned to tap reasons for respondent choice. Your results may not satisfy you, but it is worthwhile to make the effort to explore some of these more fundamental and lasting political factors.

Write Your Questions. Attention to the list of variables you intend to identify will serve as a useful guide to the kind of questions you will need. Try to anticipate categories which may turn out to be useful, remembering that it will be too late to obtain any additional information once the survey is completed. It is much better to collect data which in the end you may not use than to omit an item which may turn out to be needed for a crucial cross-tabulation or control. Be on guard, of course, against the hazards involved in field use of a lengthy questionnaire. An unnecessarily long set of questions is costly in both time and respondent attention.

It is good practice to include several different wordings of the more important attitudinal items—to ask the same questions in different ways. This is a good safeguard against unintended bias or ambiguity. Of course, the different versions should be scattered throughout the questionnaire rather than grouped together. By comparing responses for consistency, you may find one version more satisfactory for the final tabulations.

In preparing the preliminary list do not hesitate to include any questions which come to mind. Plan to discard items rather than to expand. If you have not discarded a good many items by the time your final questionnaire is completed, you probably have some faulty questions in it.

Try your hand at one or more scaled set of questions or a grouping to which an index value can be attached. The experience is valuable even if your results turn out not to be actually scalable. The elementary three-point index used in the McClosky survey described in the exercises is one which requires relatively little special computation, and adds to the clarity of the tabular displays.

Pre-test Your Survey. The most experienced experts in survey research never trust their own questions, and neither should you. The pre-testing procedure is as essential a part of preparing a satisfactory instrument as the original drafting of the questionnaire. Ideally the pre-test should be administered to a small sample drawn from the same group who will constitute the total sample for the final survey. It should be administered in the same manner, and by the same interviewers. In your own project, you are probably your own interviewer, which is actually an advantage—you are the person most familiar with your questions and can judge most accurately whether you are getting useful responses from the pre-test respondents.

A check list of flaws to watch for at the pre-test stage includes the variety of "bad question" categories described in Section 6–5. Look especially for awkward wording, ambiguities, questions which the respondent obviously does not understand or misinterprets, and for items which elicit a high percentage of "Don't Know's." For attitude items repeated in more than one wording, check for consistency of responses.

The pre-test is also a useful check on the time required for administration of the finished questionnaire. If you have the common experience of finding that the average respondent requires thirty minutes to complete what you envisaged as a five-minute questionnaire, consider ways and means of cutting down the length. The average mail questionnaire, for example, should not require more than ten minutes to complete.

With the pre-test results in, do preliminary computations for some or all of the tables you plan to include in your final report. You may discover useless items, categories not likely to be filled, and confusing identification groupings, as well as items inadvertently omitted but needed for one of the tabulations you had intended to include.

6-7 A Note on the Exercises

For preliminary practice in literature searching and "hypothesis brainstorming," a selection of tables from major political surveys is given in the exercise set following this chapter, together with brief descriptions of the original projects from which they are drawn.

As you examine each, identify the variables displayed and jot down a few questions which the investigators might have used to elicit the tabulated responses. Some of the variables are simple identification items; others are diffuse attitudinal categories. Think of the table in terms of your own project. Does it suggest any pattern which might be useful either in writing your questionnaire or in analyzing your expected results?

Work out a formal *null hypothesis* for the table (a briefly worded statement that there is no association between or among the variables). Without testing for statistical significance, decide tentatively what the table seems to show. Is the null hypothesis likely to be rejected? Phrase a short sentence in non-statistical language which you think the investigator might have used in his written account of the results shown in the table. Finally, if the source article or book is available, go to the original report and read what the authors actually said. Do your conclusions agree? If not, recheck the table and find what led you astray—or whether you can challenge the author's own statement. Satisfying (when you are right) or sobering (when you are wrong), the experience is invaluable in planning your own work. It furnishes a sort of acid test of your ability to read and discuss a table.

Relevance. As your survey project unfolds, constantly keep in mind the principle of relevance—the relationship between theory and fact. Knowledge grows by the interaction of ideas and empirical investigation, of conceptualization and the testing of concepts. This is especially evident in the contributions of survey research to political science. If you can develop your project as such a link between theoretical propositions about politics and objective findings about political reality, you are well on the road to becoming a competent research scholar.

Exercise Set 6. Do It Yourself

Part 1. Write Some Questions.

1. Prepare four questions on a topic of your own to illustrate the four variations of the Stimulus-Response model (Section 6-4).

(a) SF-RF ____________________

(b) SF-RS ____________________

(c) SS-RF ____________________

(d) SS-RS ____________________

2. Prepare a scaled set of five questions of increasing or decreasing intensity, of the type illustrated in Section 6-3, part 5. Select your own topic.

Intensity Level

(a) ____________________

(b) ____________________

(c) ____________________

(d) ____________________

(e) ____________________

3. On a separate sheet, prepare your own list of "bad questions" to illustrate each of the 23 types of standard errors listed. After each question, rewrite it so as to eliminate the objectionable feature.

Part 2. How Would You Word the Hypothesis?

On the pages following, you will find 13 tables, with a brief account of the major surveys from which they were selected. For each table listed below, state the null hypothesis verbally. For uniformity, mention the dependent variable first, the independent variable next, and the control variable, if any, last.
Example: The first table of Exercise Set 2, "Party Preference as a Function of Parental Party Preference."
H_0: Party preference of children does not differ significantly for children of Democratic parents as compared with children of Republican parents or with children of parents whose party preferences shifted.

1. Leaders and Followers, Table 6-A

H_0: ______________________________

____

2. Leaders and Followers, Table 6-B

H_0: ______________________________

____

3. Consensus in the Affluent Society, Table 6-C

H_0: ______________________________

____

4. Consensus in the Affluent Society, Table 6-D

H_0: ______________________________

____

5. Burke's Theory of Representation, Table 6-E

H_0: ____________________

____

6. Burke's Theory of Representation, Table 6-F

H_0: ____________________

____

7. Children and Politics, Table 6-G

H_0: ____________________

____

8. Children and Politics, Table 6-H

H_0: ____________________

____

9. Attitudes of Panamanian Students, Table 6-I

H_0: ____________________

____

10. Voting Behavior of London Students, Table 6-J

H_0: ____________________

____

11. Women in Politics, Table 6-K

H_0: ____

____

12. The Non-Voter, Table 6-L

H_0: ____

____

13. The Non-Voter, Table 6-M

H_0: ____

____

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5. Views of British and Panamanian Students 224
6. Women in Politics 224
7. The Non-Voter 226

1. *Leaders and Followers.* The historic survey on which Tables 6-A and 6-B are based was first reported in the *American Political Science Review* in 1960. It supplied an intensive investigation of the familiar notion that the American two-party system tends to result in non-ideological parties, agreeing on most important issues since to win they must appeal to approximately the same elements of the electorate. The questionnaire was self-administered, consisting of 390 scale items, including respondent's attitudes on twenty-four major national issues then considered important. The "leaders" sample consisted of 3020 delegates to the national party conventions of 1956 (1788 Democrats and 1232 Republicans), including high-ranking party leaders—state governors, senators, national committeemen, as well as lesser officials—precinct workers, and block captains. The "followers" sample was essentially the Gallup sample. Gallup interviewers distributed the questionnaires, and 1484 usable ones were returned, closely matching chief characteristics of the United States voting population.

The "support ratio" entries in the tables represent the average response of respondents in the columnar groups to questions regarding support of the issues listed, with the value 1.00 assigned to the response "increase," .50 to the response "same," and 0.0 assigned to the response "decrease." Thus they permit comparisons between columnar categories by supplying a single index, ranging from zero to 1.00, describing, for example, the average attitude of Democratic leaders on foreign aid, and another describing the average attitude of Republican leaders on the same question. The most general finding of the study was that Republican and Democratic leaders were more widely separated (by a difference of .21 in support ratios) than were Republican and Democratic followers (whose support ratios differed by only .04).

TABLE 6-A. *Comparison of Party Leaders and Followers on Reliance on the United Nations, by Percentages and Ratios of Support*

Reliance on United Nations		Leaders Dem. N = 1,788	Leaders Repub. N = 1,232	Followers Dem. N = 821	Followers Repub. N = 623
		(%'s down)			
% favoring:	Increase	48.9	24.4	34.7	33.4
	Decrease	17.6	34.8	17.3	19.3
	Same, n.c.	33.5	40.7	48.0	47.3
Support Ratio		.66	.45	.59	.57

Source: Herbert McClosky, Paul J. Hoffmann, and Rosemary O'Hara, "Issue Conflict and Consensus among Party Leaders and Followers," *American Political Science Review,* Vol. 54 (1960), pp. 406–427.

TABLE 6-B. *Comparison of Party Leaders and Followers on Public Control of Atomic Energy, by Percentages and Ratios of Support*

Public Control		Leaders Dem. N = 1,788	Leaders Repub. N = 1,232	Followers Dem. N = 821	Followers Repub. N = 623
		(%'s down)			
% favoring:	Increase	73.2	45.0	64.2	59.4
	Decrease	7.2	15.3	7.1	10.0
	Same, n.c.	19.6	39.7	28.7	30.6
Support Ratio		.83	.65	.79	.75

Source: Same as Table 6-A.

2. *Consensus in the Affluent Society.* One interesting use of survey data accumulated over the years is illustrated by Robert E. Lane's far-ranging examination of American opinion trends, "The Politics of Consensus in an Age of Affluence," (*American Political Science Review,* Vol. 59, No. 4, December 1965, pp. 874–895). By comparing polls and surveys taken at different points in time, but asking identical or essentially similar questions, Lane attempts a non-rigorous test of the generalization that economic conditions in a society have broad political consequences. Tables 6-C and 6-D represent two of the time-trend patterns studied: a general level of optimism, and the more specific attitude toward racial integration in schools.

Comparing polls taken at different times presents certain statistical problems; the sampling error may diverge in two successive polls so that an invalid conclusion seems supported. Unlike the panel survey, in which the same respondents are interviewed at two or more times (before and after an election), each successive poll has its own randomly drawn sample. The usual published poll (including those of the American Institute of Public Opinion used here) does not include information on the size of the sample, although it is available—usually about 1600. Lane recognizes these and other difficulties in using survey data for comparing opinion in times of economic insecurity and economic security. He calls his article "a speculative historical study making use of such data as come to hand."

3. *Burke's Theory of Representation.* Should the elected representative consider himself responsible to his constituents or to his own conscience? Edmund Burke's dictum, that "not local purposes, not local prejudices ought to guide, but the general good," is the classic statement of the "trustee" theory of representation. To examine this doctrine's acceptance by actual legislators,Eulau and associates interviewed almost all members of four state legislatures during the 1957 sessions—in all, 474 interviews of about two hours duration were conducted. The states—California, New Jersey, Ohio, and Tennessee—represent different regions, different party divisions, and different degrees of urbanization, so that we might expect the results to be typical of state legislatures in general.

The authors distinguish two concepts in Burke's theory: the *focus* of representation (which interests come first—those of the local district or of the state as a whole?), and the *style* of representation (how does the legislator view his own role—as a delegate, expressing his constituents' views, or as a Burkean trustee, following his own best judgment?). From the results, three categories emerged for both the areal-focal and the role variables—a more or less pure Burkean type (state-oriented, trustee), its opposite (district-oriented, delegate), and a group between those two poles (state-district-oriented, politico). Legislators in the third group typically felt they could represent both state and district interests without serious conflict, and that they could represent their constituents' views and their own at the same time.

Tables 6-E and 6-F display some of the results of the study, examining the possible effect of party competitiveness on areal orientation, and the degree of association of the two basic Burkean concepts—areal focus and role.

If at all possible you should read the entire source article. It is recommended as a model of empirical research, in which the methods of modern political science are used to examine a long-standing issue of democratic theory.

TABLE 6-C. *Perceptions of Life Now, Earlier, and Later*

"Ten years from now, do you believe Americans will generally be happier than they are today?" (AIPO, May 18, 1939). "As you look to the future, do you think life for people generally will get better—or will it get worse?" (AIPO, March 15, 1952; Aug. 29, 1962)

	1939	1952	1962
	(%)	(%)	(%)
Better (happier)	42	42	55
Worse (not happier)	35	34	23
No difference		13	12
No opinion	23	11	10

Source: Robert E. Lane, "The Politics of Consensus in an Age of Affluence," *American Political Science Review*, Vol. 59 (1965), pp. 874–895.

TABLE 6-D. *Changing Attitudes Toward Integration*

"Would you, yourself, have any objection to sending your children to a school where a few of the children are colored? Where half of the children are colored?" (AIPO)

	Per Cent "Yes"			
	Where a Few Children Are Colored		Where Half of Children Are Colored	
	Outside South	South	Outside South	South
	(%)	(%)	(%)	(%)
1958	13	72	39	81
1959	7	72	34	83
1963 (June)	10	61	33	78
1965 (May)	7	37	28	68

Source: Same as Table 6-C.

TABLE 6-E. *Political Character of Electoral Districts and Areal Role Orientations in Three States**

	Political Character of District		
Areal Role Orientation	Competitive ($N = 72$)	Semi-competitive ($N = 77$)	One-party ($N = 96$)
District	53%	48%	33%
District-and-State	28	34	33
State	19	18	34
Total	100%	100%	100%

* California, New Jersey and Ohio. "Non-respondents" on the areal dimension have been omitted.

Source: Heinz Eulau, John C. Wahlke, William Buchanan, and LeRoy C. Ferguson, "The Role of the Representative: Some Empirical Observations on the Theory of Edmund Burke," *American Political Science Review*, Vol. 53 (1959), pp. 742–756.

TABLE 6-F. *Areal-Focal and Representational Role Orientations in Four States*

Representational Role Orientation	District-oriented ($N = 89$)	State-District-oriented ($N = 64$)	State-oriented ($N = 44$)
Trustee	37%	55%	84%
Delegate	36	8	—
Politico	27	37	16
Total	100%	100%	100%

Source: Same as Table 6-E.

4. *Children and Politics.* When in life do people acquire basic political ideas? Considering the importance which psychologists attach to childhood influences, it is remarkable how little political research has been directed to the formative years. Greenstein's survey of 659 New Haven children, necessarily conducted by individual interviews, is a landmark in the investigation of the roots of political socialization. Tables 6-G and 6-H report some comparisons between children and adults and among children of different ages.

Striking differences between children and adults are brought out, suggesting further study of the transitional adolescent years, during which the characteristic adult cynicism about politics apparently is formed. The most familiar political leaders are perceived far more favorably by the child than by the adult—mayor and president are benevolent figures, the mayor providing parks and swings, snow removal, and schools at the local level, while the president assures freedom, peace, and safety for the people at the national level.

Greenstein reports that the child's benevolent image persists under questioning aimed at identifying both the office and individual political leaders. Moreover, it seemed impossible to evoke cynicism even by questions structured deliberately to do so—children simply did not respond to such references. There may be implications in these findings for study of lifelong respect for authority and attachment to the political system of the country, even after adulthood brings a decreasingly favorable image of particular political leaders and offices.

In the footnote cited for Table 6-G, the author points out that the column reporting adult opinion of the president is not strictly comparable—the wording and the alternatives were different and the sample was national. Approval of President Eisenhower was probably higher in the East than in the South. Similar polls controlled for region indicate the "approval" entry might have been about 65 per cent, still lower than that for the children.

TABLE 6-G. *Children's Evaluations of Three Political Executives Contrasted with Adult Evaluations of President Eisenhower During the Same Time Period*

	Children			Adults[a]	
	Mayor	Governor	President		President
Very good	62%	40%	71%	Approve	58%
Fairly good	27	28	21		
Not very good	4	2	4	Disapprove	27
Bad	1	—[b]	1		
Don't know	6	30	4	No opinion	15
Number of cases	651[c]	643[c]	649[c]		

[a] February 1958 AIPO findings, reported in March 1958 release. These findings are based on a national sample. On their comparability with the New Haven data, see footnote 11 in source.

[b] Less than 1 per cent.

[c] Number of cases does not equal complete sample due to invalid responses.

Source: Fred I. Greenstein, *Children and Politics* (New Haven: Yale University Press, 1965).

TABLE 6-H. *Children's Images of the Mayor and President, by School Year**

	School Year				
	4th	5th	6th	7th	8th
Mayor					
Benevolence: "helps us" "gives us freedom"	20%	16%	9%	3%	4%
Normative role: "does good things" "tells what is right or wrong"	7	12	13	8	12
Services to children: "makes parks and swings"	15	14	1	11	15
Number of cases	55	82	98	115	151
President					
Benevolence	26%	11%	5%	5%	4%
Normative	5	9	11	3	7
Number of cases	62	80	95	112	160

* Percentages are based on those children who were able to produce a description of the executive role, whether or not the description was "reasonably accurate" (excluding grossly inaccurate or vague statements).

Source: Same as Table 6-G.

5. *Views of British and Panamanian Students.* Further data on political socialization are shown in Table 6-I and 6-J, from two surveys of selected student groups. Both studies were made in 1960, though the respondent samples were widely separated both geographically and culturally. However, both studies have the common feature of distinguishing for social class in groups from which a considerable number of future political leaders are likely to come.

The Panamanian sample consisted of 91 eleventh-grade students from two large secondary schools in Panama City. The private school, one operated by a Catholic order, is a prestige institution, attended by children of the social elite, including those of many government officials. The public school is the largest in the city, with a reputation for political activism by students and a democratic, anti-clerical tradition. Thus the two groups are categorized by the authors as "Upper Class" and "Middle and Lower Class." The questionnaire for the Panama survey, incidentally, included a number of items from Greenstein's study of New Haven children.

The London study is based on a larger sample—respondents were 740 third-year students of British nationality at four London colleges. The author points out that in the context of British society, all the respondents may be considered middle class because of the jobs they will enter after graduation, so that those who report they have working-class parents are themselves upwardly mobile in the social scale. Table 6-J unfortunately does not include *N*'s, but the author tells us that the group with working-class parents is 23 per cent of the total. (From other information in the source article, it appears that *N*'s for the six columns of the table are approximately: 275, 88, 27, 44, 60, 6, with "Don't Know's" omitted).

These two surveys, with the Greenstein study, afford a few glimpses of three distinct stages in the process of personal and political maturation—childhood, late adolescence, and young adulthood. If political socialization continues throughout life—as it undoubtedly does—each phase is nonetheless a partial product of what has gone before.

6. *Women in Politics.* Another little-studied aspect of political socialization is the participation of women in both formal and unofficial political organizations. Since the enactment of women's suffrage in the United States in 1920, both major political parties have provided for equal representation of women on their national committees—a principle adopted as well by many state party organizations. Thus the number of women party officials tends towards equality with men, though there is some doubt that they exercise an equivalent influence. The authors of Table 6-K became interested in the political role of women as a result of a larger intensive study of political socialization in the United States and Canada, finding that women constituted almost one-third of the party officials interviewed in Minneapolis and Seattle. The data reported are based on interviews with 98 women in Democratic party positions and 110 women in Republican party positions, together with a mail questionnaire covering the same items addressed to members of the League of Women Voters in the two cities. The League is the leading nonpartisan voluntary association of women interested in public affairs; it never endorses candidates, but has a well-deserved reputation for consistent support of governmental and social reforms. The groups compared in Table 6-K are both politically active, then, but differ in that one group consists of partisan activists while the other consists of nonpartisan activists.

TABLE 6-I. *Attitudes of Panamanian Students toward Cubans, North Americans, and Russians*

	Private School Per Cent	Public School Per Cent
Cubans		
Like	23	51
Indifferent	56	47
Don't like	21	2
Total	100	100
N	(34)	(43)
North Americans		
Like	21	32
Indifferent	61	39
Don't like	18	29
Total	100	100
N	(33)	(44)
Russians		
Like	18	26
Indifferent	43	36
Don't like	39	38
Total	100	100
N	(33)	(42)

Source: Daniel Goldrich and Edward W. Scott, "Developing Political Orientations of Panamanian Students," *The Journal of Politics,* Vol. 23, No. 1, February 1961, pp. 84–107.

TABLE 6-J. *Social Class and Inter-Generation Voting Behavior: London University Students*

Students' Party Ties	Students With Middle-Class Parents Who Vote:			Students With Working-Class Parents Who Vote:		
	Conservative %	Labour %	Liberal %	Conservative %	Labour %	Liberal %
Conservative	52	16	18	43	20	33
Labour	15	54	22	5	43	17
Liberal	15	12	60	32	10	50
Other and D.K.	18	18	—	20	27	—
Total	100	100	100	100	100	100

Source: Mark Abrams, "Social Trends and Electoral Behaviour," *The British Journal of Sociology,* Vol. 13, No. 3 (1962), pp. 228–42.

TABLE 6-K. *Relation of Age of First Party Identification to Parental Agreement in Political Party Support for Women Party Officials and League of Women Voter Members*

Age of First Identification	Women Party Officials		League of Women Voter Members	
	Parents for Same Party	Parents not for Same Party	Parents for Same Party	Parents not for Same Party
6 years & under	29%	22%	4%	3%
7–9 years	30	17	13	12
10–12 years	28	24	26	25
13–15 years	6	27	25	15
16–18 years	8	10	32	45
(*N*)	(130)	(41)	(267)	(155)

Source: "Variable Partisan Commitment among Politically Active Women," by David Bromley, Allan Kornberg, and Joel Smith, a paper presented at the Midwest Conference of Political Scientists, May 1968, Chicago. Reprinted with the kind permission of the authors.

7. *The Non-Voter.* In the United States, with so high a democratic tradition, so much value placed on the vote, and regular saturation campaigns by all the media to get out the vote in national presidential elections, why does turnout remain disappointingly low? Aside from those legally or extra-legally barred from the ballot, what kind of person is the non-voter?

The most extensive scientific studies of the American electorate are those conducted by the Survey Research Center of the University of Michigan, going back to the 1948 election. Data from surveys in the three elections of 1948, 1952, and 1956 were drawn on by the authors of *The American Voter,* a work which the late V.O. Key called "a monumental performance...in the adaptation of survey analysis to the study of problems that really bear on the political system." Tables 6-L and 6-M, from the chapter on voting turnout, concentrate attention on two aspects of the problem—concern of respondent about the outcome, and party preference of the non-voter. Other relationships studied include respondent perception of closeness of the election, interest in the campaign, sense of political efficacy, and sense of citizen duty.

Association between turnout and concern over outcome (Table 6-L) is a simple and expected pattern, but the time trend figures of Table 6-M are more difficult to interpret. The authors report that of all the statistical relationships in all of the Center's surveys, few have shown so violent a change over time as this one. Earlier opinion polling in the 1930's had seemed to establish a fairly firm principle that most non-voters were Democratic—a behavior pattern apparently related to the fact that low-income people tended to be both non-voters and Democrats. The sequence of data in Table 6-M seems to explode this legend, but what does the table actually say? Try your hand at interpreting it before turning to the next exercise for an additional analysis.

TABLE 6-L. *Relation of Degree of Concern About Election Outcome to Voting Turnout, 1956*

	Degree of Concern Over Election Outcome			
	Don't Care at All	Don't Care Very Much	Care Somewhat	Care Very Much
Voted	52%	69%	76%	84%
Did not vote	48	31	24	16
	100%	100%	100%	100%
Number of cases	230	367	627	459

Source: Angus Campbell, Phillip E. Converse, Warren E. Miller, and Donald E. Stokes, *The American Voter: An Abridgment* (New York: John Wiley and Sons, Inc., 1964).

TABLE 6-M. *Postelection Preference of Nonvoter, 1948 to 1956*[a]

	1948	1952	1956
Would have voted Democratic	82%	52%	28%
Would have voted Republican	18	48	72
Total	100%	100%	100%
Number of cases	192	417	429

[a] Among nonvoters giving a preference between major-party candidates.

Source: Same as Table 6-L.

Part 3. Review Your Statistics

1. The last table examined (Table 4-7 in *The American Voter*) is an excellent example of a deceptively simple array which is difficult to interpret. If we apply the Q test to the percentages by pairs, we find a relatively high coefficient for the 1948–1952 pair, almost as high a coefficient for the 1952–1956 pair, and a very high coefficient for the 1948–1956 pair.

Compute the Q values for the three pairs:

	1948	1952
Democratic		
Republican		

$Q =$

	1952	1956
Democratic		
Republican		

$Q =$

	1948	1956
Democratic		
Republican		

$Q =$

Clearly the table is showing something, but just what? We might have said after 1952 that "most non-voters are Democrats," but the 1956 result makes this highly improbable. We might say "in two elections out of three the non-voters preferred the winner," but two out of three is not a very significant result. We might reason that the entire period covered was one of Democratic decline, and a rank correlation on the three elections, comparing actual Democratic election strength with Democratic strength among non-voters does yield a correlation of + 1.00, but for $N = 3$ no very significant conclusion is possible.

Falling back on your general knowledge of political science and of American politics, you will recall the frequent emphasis on the strength of incumbency. Identifying the three elections by this variable, we have something like the following scale:

(1) In 1948: Democratic candidate was incumbent, and won.

(2) In 1952: Neither candidate was incumbent, but Democratic incumbent gave strong support to the non-incumbent Democratic candidate.

(3) In 1956: Republican candidate was incumbent, and won.

With this scale in mind we are in a position to test the proposition that incumbency is a more influential factor with the disinterested non-voters than with those who vote, perhaps because of the greater visibility and more familiar name of the person who is actually president. The following exercise leads to one method of testing the idea.

Step 1. Retrieve the frequencies:

	1948	1952	1956
D	157	217	120
R	35	200	309

Step 2. Determine "expected" values from the actual two-party election results in per cent:

	1948	1952	1956
D	52%	45%	42%
R	48	55	58

1948	1952	1956
100	188	180
92	229	249

Step 3. Reconstruct the table to show actual and expected frequencies on the incumbency variable for each party:

1948	O	E	D	D^2	D^2/E
Democratic incumbent	157	100	57		
Republican non-incumbent	35	92	57		

$\chi^2 =$

1956	O	E	D	D^2	D^2/E
Republican incumbent	309	249	60		
Democratic non-incumbent	120	180	60		

$\chi^2 =$

H_0: Non-voter preference for incumbent not significantly greater than that of voters.
Significance level: .05
Statistic: χ^2
df = 1.
χ^2 value needed to reject: ____________
Is H_0 rejected for Democrats ______________ for Republicans? ______________

2. Obtain the Q value for each of the two tables below as a preliminary test of significance of association. Then compute the chi-square value to test the null hypothesis at the .05 level.

TABLE 6-N. *Interest in World Affairs by ROTC Status* (from Chapter 4)

Interest Level	ROTC	non-ROTC	Total
Average & Lower	12	14	26
Above Average	13	11	24
Total	25	25	50

$Q = (ad - bc)/(ad + bc) =$ ______________

Chi-square worksheet

O	E	D	D^2	D^2/E
12	(1/2) 26 =			
13	(1/2) 24 =			
14	(1/2) 26 =			
11	(1/2) 24 =			

df = 1 $\chi^2 =$

H_0: Interest not significantly related to ROTC status.
Significance level: .05

Is H_0 rejected? ______________

TABLE 6-O. *Voter Turnout by Education* (Revised from Chapter 2).

Per cent and (N)

	College	Non-college	Total N
Did not vote	11 (12)	23 (136)	148
Voted	89 (102)	77 (452)	554
Total	100 (114)	100 (588)	702

$Q =$ ______________

Chi-square worksheet

O	E	D	D^2	D^2/E
12	(114 × 148)/702 =			
102	(114 × 554)/702 =			
136	(588 × 148)/702 =			
452	(588 × 554)/702 =			

$\chi^2 =$

H_0: Voter turnout not related to education.
Significance level: .05

Is H_0 *rejected?* ______________

Reading List

Part 2 of this list is added to supply a source of hypotheses about politics for those in search of ideas for a survey of their own. It is, of course, far from complete, and could be expanded almost indefinitely. In addition to the books listed, which include both survey reports and theoretical studies, you will find help in the many journal articles reporting on survey research. A list of the principal journals which frequently publish such articles is given in the reading list for Chapter 10.

1. *Books About Survey Research*

Backstrom, Charles H., and Gerald D. Hursh, *Survey Research*. Evanston: Northwestern University Press, 1963.*

Hyman, Herbert, *Survey Design and Analysis*. New York: Free Press, 1955.

Lazarsfeld, Paul F., and Morris Rosenberg (Eds.), *The Language of Social Research*. New York: Free Press, 1955.*

Merton, Robert K., Marjorie Fiske, and Patricia L. Kendall, *The Focused Interview*. New York: Free Press, 1956.

Miller, Delbert C., *Handbook of Research Design and Social Measurement*. New York: David McKay Co., Inc., 1964.*

2. *Sources of Hypotheses for an Original Survey*

Almond, Gabriel A., and Sidney Verba, *The Civic Culture: Political Attitudes and Democracy in Five Nations*. Princeton: Princeton University Press, 1963.

_____, and James S., Coleman (Eds.), *Politics of the Developing Areas*. Princeton, N. J.: Princeton University Press, 1960.

Apter, David E. (Ed.), *Ideology and Discontent*. New York: Free Press, 1964; Vol. V of the *International Yearbook of Political Behavior Research.*

Bailey, Harry A., Jr. (Ed.), *Negro Politics in America*. Columbus: Charles E. Merrill Publishing Co., 1967.

Berelson, B. R., P. F. Lazarsfeld, and W. N. McPhee, *Voting*. Chicago: University of Chicago Press, 1954.

Buchanan, William, and Hadley Cantril, *How Nations See Each Other*. Urbana: University of Illinois Press, 1953.

Campbell, Angus, Philip E. Converse, Warren E. Miller, and Donald E. Stokes, *The American Voter*. New York: John Wiley and Sons, Inc., 1960.

_____, *Elections and the Political Order*. New York: John Wiley and Sons, Inc., 1966.

_____, Gerald Gurin, and Warren E. Miller, *The Voter Decides*. Evanston: Row, Peterson, 1954.

Cantril, Hadley, *The Pattern of Human Concerns*. New Brunswick, N.J.: Rutgers University Press, 1965.

Dahl, Robert A., *Who Governs? Democracy and Power in an American City*. New Haven: Yale University Press, 1961.

Eulau, Heinz, Samuel J. Eldersveld, and Morris Janowitz (Eds.), *Political Behavior: A Reader in Theory and Research*. New York: Free Press, 1956.

_____, (Ed.), *Political Behavior in America: New Directions*. New York: Random House, Inc., 1966.

Farrell, R. Barry (Ed.), *Approaches to Comparative and International Politics*. Evanston: Northwestern University Press, 1966.

Free, Lloyd A., and Hadley Cantril, *The Political Beliefs of Americans: a study of public opinion*. New Brunswick, N.J.: Rutgers University Press, 1967.

Greenstein, Fred I., *Children and Politics*. New Haven: Yale University Press, 1965.

Huntington, Samuel P. (Ed.), *Changing Patterns of Military Politics*. New York: Free Press, 1962; Vol. III of the *International Yearbook of Political Behavior Research.*

Hyman, Herbert H., *Political Socialization, a study in the psychology of political behavior*. Glencoe, Ill.: The Free Press, 1959.

Janowitz, Morris (Ed.), *Community Political Systems*. New York: Free Press, 1960; Vol. I of the *International Yearbook of Political Behavior Research.*

Katz, Daniel, Dorwin Cartwright, Samuel Eldersveld, and Alfred McClung Lee (Eds.), *Public Opinion and Propaganda*. New York: Holt, Rinehart and Winston, 1954.

Key, V. O., Jr., *Southern Politics in State and Nation*. New York: Alfred A. Knopf, Inc., 1949.

Lane, Robert E., *Political Ideology: Why the American Common Man Believes What He Does*. New York: Free Press, 1962.*

Lazarsfeld, Paul F., Bernard Berelson, and Hazel Gaudet, *The People's Choice*. New York: Duell, Sloan and Pearce, Inc., 1944.

Marvick, Dwaine (Ed.), *Political Decision-Makers*. New York: Free Press, 1961; Vol. II of the *International Yearbook of Political Behavior Research.*

Rose, Richard (Ed.), *Studies in British Politics: A Reader in Political Sociology*. London: Macmillan Co., 1966.

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* Paperback edition available.

Rosenau, James N. (Ed.), *Domestic Sources of Foreign Policy.* New York: Free Press, 1967

_____, (Ed.), *International Politics and Foreign Policy: A Reader in Research and Theory.* New York: Free Press, 1961.

_____, (Ed.), *National Leadership and Foreign Policy: A Case Study in the Mobilization of Public Support.* Princeton: Princeton University Press, 1963.

_____, *Public Opinion and Foreign Policy, an operational formulation.* New York: Random House, 1961.

Ross, H. Laurence (Ed.), *Perspectives on the Social Order.* New York: McGraw-Hill Book Co., Inc., 1963.*

Schubert, Glendon (Ed.), *Judicial Decision-Making.* New York: Free Press, 1963; Vol. IV of the *International Yearbook of Political Behavior Research.*

Singer, J. David (Ed.), *Quantitative International Politics: Insights and Evidence.* New York: Free Press, 1967; Vol. VI of the *International Yearbook of Political Behavior Research.*

Truman, David B., *The Governmental Process.* New York: Alfred A. Knopf, Inc., 1951.

Wahlke, John C., and Heinz Eulau (Eds.), *Legislative Behavior: A Reader in Research and Theory.* New York: Free Press, 1959.

_____, Heinz Eulau, William Buchanan, and Leroy C. Ferguson, *The Legislative System: Explorations in Legislative Behavior.* New York: John Wiley and Sons, Inc., 1962.